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DRAFT CONTAMINATION ASSESSMENT REPORT SITE 3221NE NAVAL AVIATION DEPOT  
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ABB ENVIRONMENTAL SERVICES INC

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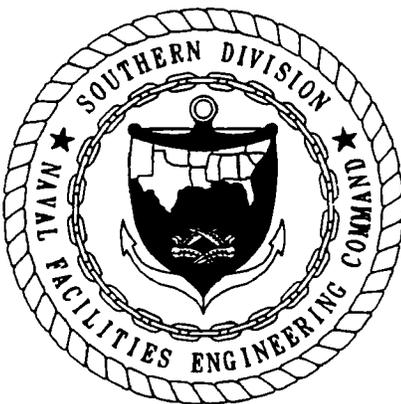


**DRAFT**

**CONTAMINATION ASSESSMENT  
REPORT**

**SITE 3221NE  
NAVAL AVIATION DEPOT  
NAVAL AIR STATION  
PENSACOLA, FLORIDA**

**JULY 1992**



**SOUTHERN DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
CHARLESTON, SOUTH CAROLINA  
29411-0068**

**DRAFT  
NOT FOR PUBLIC RELEASE**

# **CONTAMINATION ASSESSMENT REPORT**

**SITE 3221NE  
NAVAL AVIATION DEPOT  
NAVAL AIR STATION  
PENSACOLA, FLORIDA**

**UIC: N00204**

**Contract No. N62467-89-D-0317**

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**July 1992**



## FOREWORD

Subtitle I of the Hazardous and Solid Waste Amendments (HSWA) of 1984 to the Solid Waste Disposal Act (SWDA) of 1965 established a national regulatory program for managing underground storage tanks (USTs) containing hazardous materials, especially petroleum products. Hazardous wastes stored in USTs were already regulated under the Resource Conservation and Recovery Act (RCRA) of 1976, which was also an amendment to SWDA. Subtitle I requires that the U.S. Environmental Protection Agency (USEPA) promulgate UST regulations. The program was designed to be administered by the individual States, who were allowed to develop more stringent standards, but not less stringent standards. Local governments were permitted to establish regulatory programs and standards that are more stringent, but not less stringent than either State or Federal regulations. The USEPA UST regulations are found in the Code of Federal Regulations, Title 40, Part 280 (40 CFR 280) (*Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks*) and Title 40 CFR 281 (*Approval of State Underground Storage Tank Programs*). Title 40 CFR 280 was revised and published on September 23, 1988, and became effective December 22, 1988.

The Navy's UST program policy is to comply with all Federal, State, and local regulations pertaining to USTs. This report was prepared to satisfy the requirements of the Florida Department of Environmental Regulation (FDER) Chapter 17-770, Florida Administrative Code (FAC) (*State Underground Petroleum Environmental Response*) regulations on petroleum contamination in Florida's environment as a result of spills or leaking tanks or piping.

Questions regarding this report should be addressed to the Environmental Coordinator, Naval Aviation Depot (NADEP), Naval Air Station, Pensacola, Florida, at 904-452-2320, or to Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), Code 1843, at AUTOVON 563-0613 or 803-743-0613.

## EXECUTIVE SUMMARY

During an underground storage tank (UST) removal program conducted by the U.S. Navy in 1989 and 1990, 18 sites at the Naval Aviation Depot (NADEP), Naval Air Station, Pensacola, Florida, were identified as having soil contamination exceeding State regulatory standards for total recoverable petroleum hydrocarbons (TRPH). ABB Environmental Services, Inc. (ABB-ES), was contracted by Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) to perform a contamination assessment (CA) for each of the 18 sites.

Site 3221NE is the former location of a 500-gallon UST. The UST was reportedly used for waste fuel and waste oil storage. The UST was installed in 1967, and was located approximately 400 feet north of the northeast corner of Building 3221, which is located on the eastern perimeter of Forrest Sherman Air Field. The UST was removed from the site during the tank removal program.

Soil borings and monitoring wells were placed at the site during the CA to assess the degree of soil and groundwater contamination (see Executive Summary Figure). Soil and groundwater samples were collected and analyzed for appropriate parameters. Locations of soil borings and monitoring wells and laboratory analytical results are summarized in the Executive Summary Figure. The findings, conclusions, and recommendations of this CA are summarized below.

### Findings

- The net groundwater flow direction at the site is to the north.
- No excessively petroleum-contaminated soils were identified by organic vapor analyzer (OVA) headspace analysis. Only one OVA measurement exceeded the State standard of 10 parts per million (ppm) for "clean" soil.
- Low concentrations of lead and chromium were identified in soils at the site. Total metals concentrations for lead and chromium were below State regulatory standards.
- Contaminants detected in groundwater samples which exceeded State regulatory standards for Class G-II groundwater are methylene chloride, trichloroethene, and total volatile organic aromatics (VOA). Total VOA is the sum of benzene, ethylbenzene, toluene, and xylenes. Trichloroethene and total VOA concentrations exceeded State regulatory standards in only the samples collected from monitoring well PEN-3221NE-MW10. These compounds were not detected in the farthest downgradient site wells. Concentrations of methylene chloride exceeded State regulatory standards in samples collected from four site wells. However, methylene chloride was detected in the laboratory blank associated with the groundwater analyses, and is believed to be the result of laboratory contamination.

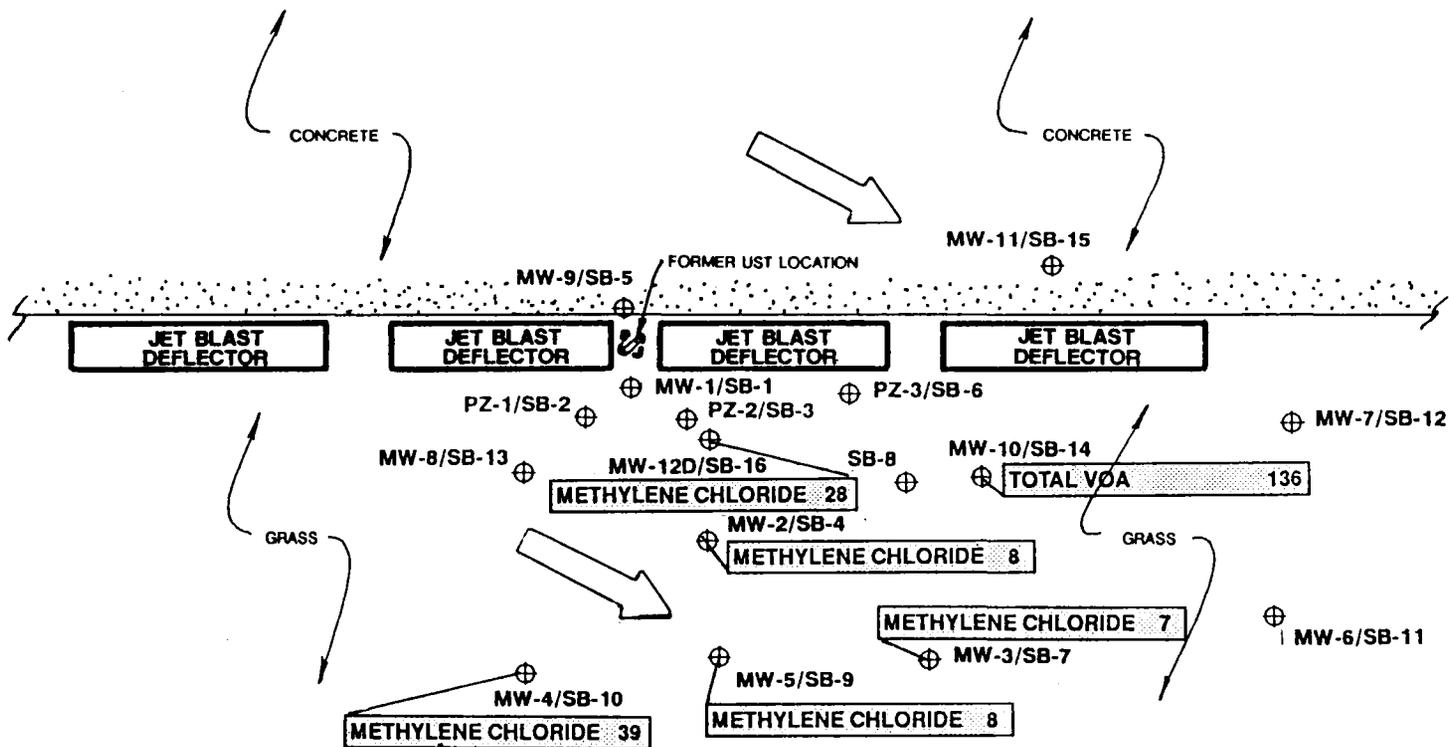
- A combined 39 additional compounds were tentatively identified in groundwater samples collected from five site wells. The tentatively identified compounds appear to be probable fuel constituents or fuel breakdown products. These compounds were not detected in downgradient wells at the site.
- No potable wells were identified within a 0.25-mile radius of the site.

### Conclusions

- The level of soil contamination found at the site appears to be minimal, and is below State regulatory standards.
- The level of groundwater contamination found at the site appears to be minimal, except in the vicinity of monitoring well PEN-3221NE-MW10. Contaminants detected in concentrations exceeding State regulatory standards do not appear to be migrating off the site, and are not expected to affect potable water supplies at the base.

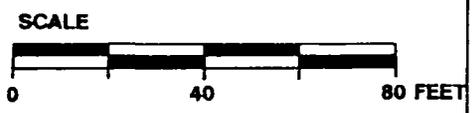
### Recommendations

Based on the findings and conclusions of the CAR, *A Monitoring Only Plan (MOP)* is recommended for site 3221NE. This plan recommends the quarterly groundwater sampling of all site monitoring wells. Groundwater samples will be analyzed for constituents of the waste oil group as outlined in Section 6.3 of this report. It is recommended that monitoring continue for a period of one year, or until contaminant concentrations decrease to levels acceptable to the State regulatory agency.



**LEGEND**

- ⊕ MONITORING WELL/PIEZOMETER/SOIL BORING LOCATION
- ▨ CONCENTRATIONS (ppb)
- ⇨ GROUNDWATER FLOW DIRECTION



**EXECUTIVE SUMMARY FIGURE**



**CONTAMINATION  
ASSESSMENT REPORT  
SITE 3221NE  
NADEP PENSACOLA  
PENSACOLA, FLORIDA**

## ACKNOWLEDGMENTS

In preparing this report, The Underground Storage Tank Section of the Comprehensive Long-Term Environmental Action, Navy (CLEAN) Group at ABB Environmental Services, Inc. (ABB-ES), commends the support, assistance, and cooperation provided by the personnel of the Naval Aviation Depot (NADEP), Pensacola, Florida, and Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM). In particular, ABB-ES acknowledges the effort provided by the following people during the investigation and preparation of this report.

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Danny Freeman	Environmental Coordinator	Environmental Coordinator	NADEP Pensacola

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- Appendix D: Aquifer Parameter Calculations
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## GLOSSARY

The following list contains many of the acronyms, initialisms, abbreviations, and units of measure used in this report.

ABB-ES	ABB Environmental Services, Inc.
BDL	below detection limits
BETX	benzene, ethyl benzene, toluene, and xylenes
bls	below land surface
CA	Contamination Assessment
CAP	Contamination Assessment Plan
CAR	Contamination Assessment Report
CFR	Code of Federal Regulations
CLEAN	Comprehensive Long-Term Environmental Action, Navy
CompQAP	Comprehensive Quality Assurance Plan
CTO	Contract Task Order
FAC	Florida Administrative Code
FDER	Florida Department of Environmental Regulation
FID	flame ionization detector
ft/day	feet per day
ft <sub>2</sub> /day	feet squared per day
ft/ft	feet per foot
ft/min	feet per minute
GC	gas chromatograph
HSWA	Hazardous and Solid Waste Amendments of 1984
ID	inside diameter
K	hydraulic conductivity
msl	mean sea level
µg/l	micrograms per liter
µmhos/cm	micromhos per centimeter
MOP	Monitoring Only Plan
NADEP	Naval Aviation Depot
NARF	Naval Air Rework Facility
NAS	Naval Air Station
NFAP	No Further Action Proposal
NGVD	National Geodetic Vertical Datum
OVA	organic vapor analyzer
PAH	polynuclear aromatic hydrocarbons
POA	Plan of Action
ppb	parts per billion
ppm	parts per million
PVC	polyvinyl chloride
RAP	Remedial Action Plan
RCRA	Resource Conservation and Recovery Act
SOUTHNAVFACENCOM	Southern Division, Naval Facilities Engineering Command
SPT	standard penetration test
SWDA	Solid Waste Disposal Act of 1965
T	transmissivity
TRPH	total recoverable petroleum hydrocarbons
UIC	uniform identification code

GLOSSARY--Continued

USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
UST	underground storage tank
V	average pore water velocity
VOA	volatile organic aromatics
VOC	volatile organic compounds

## 1.0 INTRODUCTION

In 1987, the Naval Air Rework Facility (NARF) in Pensacola, Florida, was renamed the Naval Aviation Depot (NADEP). NADEP Pensacola, Florida, formerly the operations and repair department of the Naval Air Station (NAS) Pensacola, is now a tenant command located on NAS facilities within the Pensacola Naval Base Complex. The Pensacola Naval Base Complex is located on the western edge of Pensacola Bay on State Route 295 (Navy Boulevard; Figure 1-1). NADEP Pensacola occupies approximately 130 acres at NAS Pensacola. The mission of NADEP Pensacola is to: maintain and operate facilities for, and perform a complete range of, depot-level rework operations on designated weapons systems, accessories, and equipment; manufacture parts and assemblies, as required; provide engineering services in hardware design; furnish technical services on aircraft maintenance and logistic problems; and perform other levels of aircraft maintenance.

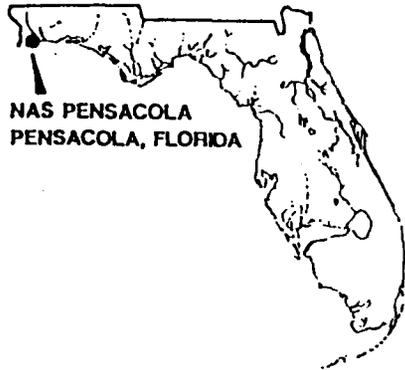
During a tank removal program implemented by the U.S. Navy in 1989 and 1990, petroleum underground storage tanks (USTs) at various NADEP site locations were removed. In many cases, these tanks were replaced with new USTs. Tank contents were reportedly restricted to petroleum products ranging from waste oil, diesel fuel, unleaded gasoline, and PD-680 (a petroleum distillate solvent similar to mineral spirits). The reported volumes of the tanks varied from 500 to 3,000 gallons. Soil samples were collected from each tank excavation and analyzed for total recoverable petroleum hydrocarbons (TRPH). Based on TRPH concentrations, 18 sites were found to be non-compliant with Florida Department of Environmental Regulation (FDER) standards, as defined in Chapter 17-770, Florida Administrative Code (FAC).

ABB Environmental Services, Inc. (ABB-ES), was contracted by Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) to perform a contamination assessment (CA) and submit a Contamination Assessment Report (CAR) for each of the 18 petroleum contaminated sites at NADEP. This CAR is submitted for one of the sites, Site 3221NE. The scope of services for the work at Site 3221NE is described in Contract Task Order (CTO) No. 008, the Plan of Action (POA), and the Contamination Assessment Plan (CAP) and included the following:

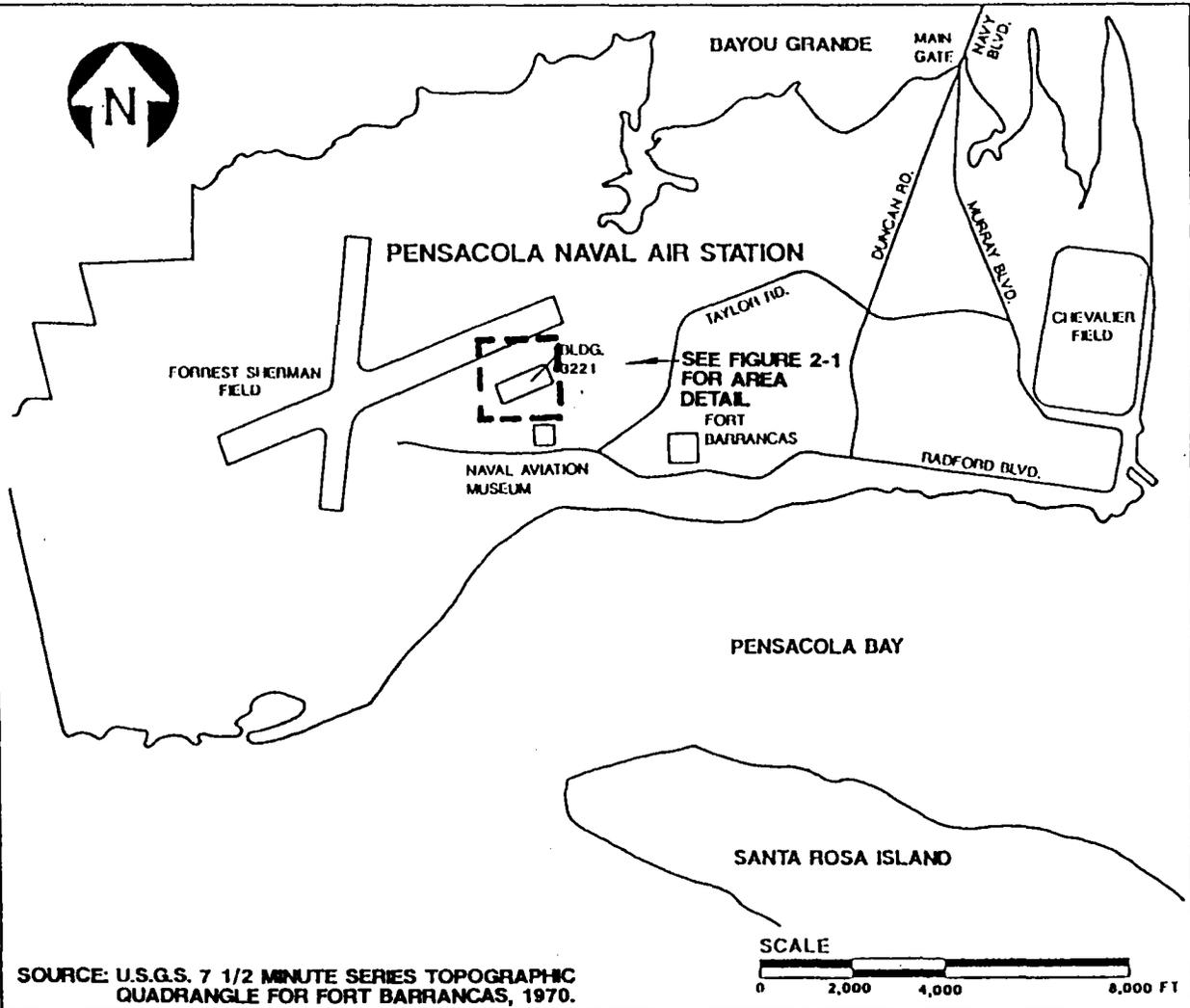
- drilling of soil borings and analyzing site soils to assess the extent of soil contamination,
- installing and sampling groundwater monitoring wells to assess the extent of groundwater contamination,
- collecting water level data to assess the groundwater flow direction and hydraulic gradient at the site.
- conducting a potable well inventory within a 0.25-mile radius of the site,
- conducting slug tests on selected wells to estimate aquifer characteristics, and

- reducing and analyzing pertinent data gathered during the CA to complete this CAR.

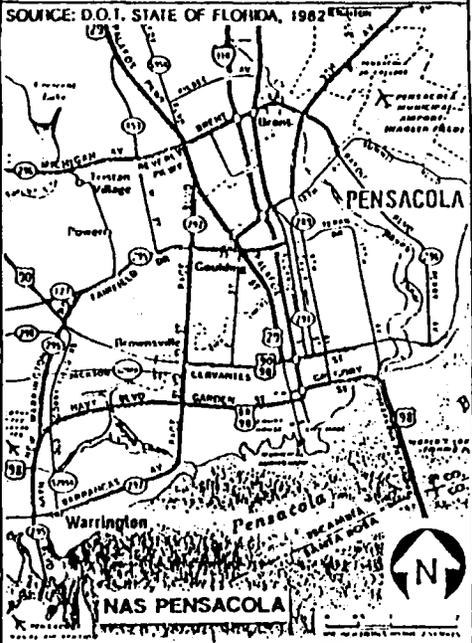
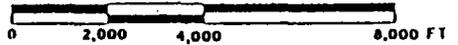
The CA at Site 3221NE was conducted from January through April 1992. The following sections of this report present the background information, data compilation, results, conclusions, and recommendations of the CAR.



NAS PENSACOLA  
PENSACOLA, FLORIDA



SCALE



SOURCE: U.S.G.S. 7 1/2 MINUTE SERIES TOPOGRAPHIC QUADRANGLE FOR FORT BARRANCAS, 1970.

FIGURE 1-1  
FACILITY LOCATION MAP



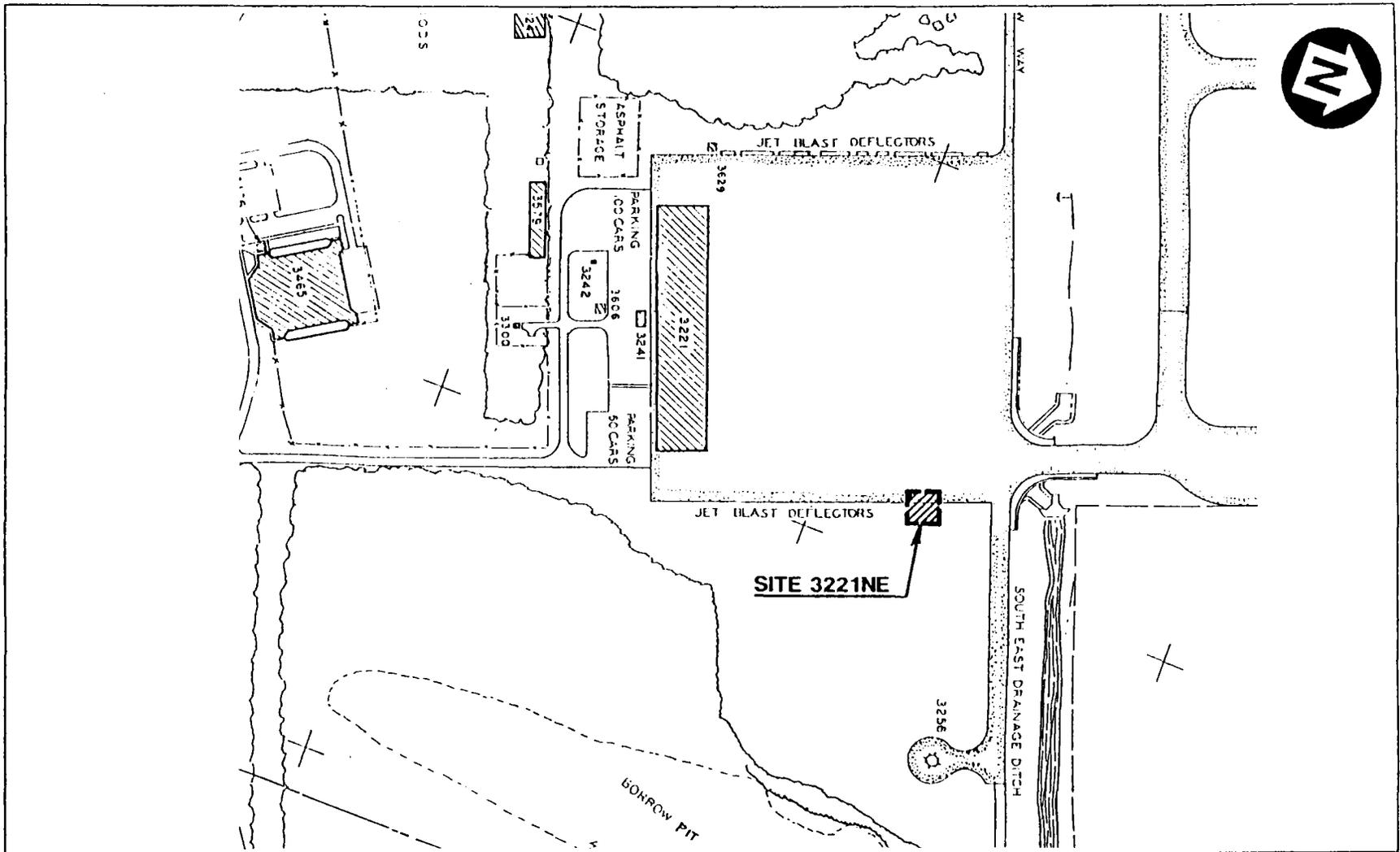
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## 2.0 SITE BACKGROUND

2.1 SITE DESCRIPTION. Site 3221NE is located approximately 400 feet north of the northeast corner of Building 3221, on the eastern perimeter of Forrest Sherman Field (Figure 2-1). Building 3221 is the location of various activities that primarily involve the restoration of airplanes and helicopters. Restoration activities include, but are not limited to, the use of paint and paint products. A large, 18-inch thick concrete apron extends north from Building 3221 to the intersection with the Sherman Field flightline. The concreted area in the immediate site vicinity appears to be primarily used for helicopter and airplane parking. Restoration activities appear to be performed away from the site and in the immediate vicinity of Building 3221.

The site is the former location of a 500-gallon UST reportedly used for the storage of water-contaminated JP-5 fuel and waste oil. Figure 2-2 is a site plan showing the former UST location and surface features in the site vicinity. The UST was located in a grassy area between jet deflectors along the eastern edge of the concrete apron.

2.2 SITE HISTORY. The UST at Site 3221NE was reportedly installed in 1967. During the tank removal and installation program, the UST was removed from the site. A composite soil sample was collected from the former UST excavation and analyzed for TRPH. The reported TRPH concentrations of 1,900 parts per million (ppm) exceeded the FDER regulatory standard of 50 ppm for petroleum contaminated soils (FDER, May 1992) and, therefore, warranted further site investigation pursuant to Chapter 17-770, FAC.



**FIGURE 2-1**  
**SITE LOCATION MAP**



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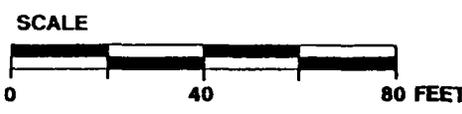
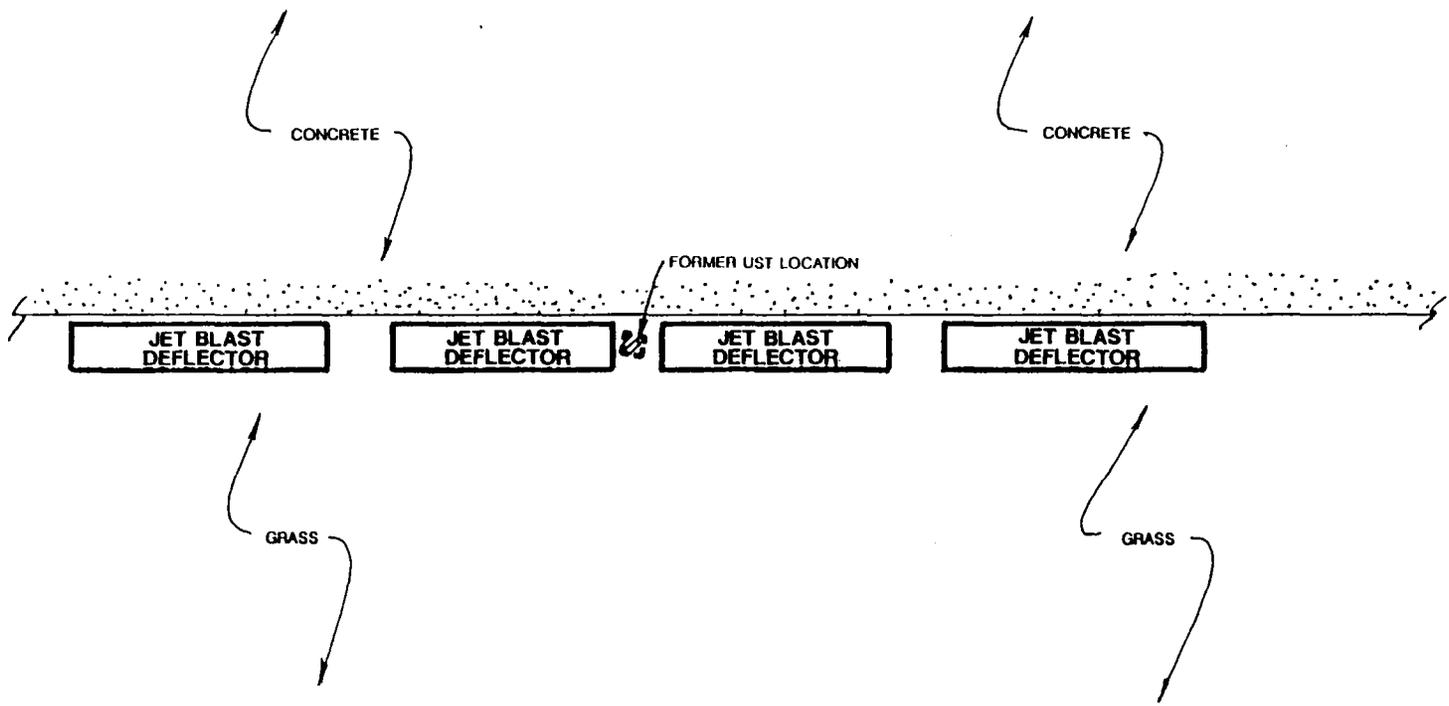


FIGURE 2-2  
SITE PLAN



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### 3.0 SITE CONDITIONS

3.1 PHYSIOGRAPHY. Regional physiography is discussed in Appendix A. Surface elevations at the site are relatively flat and are approximately 20 to 24 feet above mean sea level (msl).

#### 3.2 HYDROGEOLOGY.

3.2.1 Regional and Local The Pensacola area is underlain by three water-bearing zones. These zones, in order of increasing depth, are the sand-and-gravel aquifer, the Upper Floridan aquifer, and the Lower Floridan aquifer. A detailed discussion of these three aquifers is presented in Appendix A.

3.2.2 Site Specific The principal aquifer of concern at the site is the surficial zone of the sand-and-gravel aquifer. The surficial zone was penetrated to a depth of 37 feet below land surface (bls) during this investigation. The surficial zone is unconfined, and the water table was encountered at a depth of approximately 6 to 10 feet bls during this assessment. Site-specific aquifer characteristics and other hydrogeologic parameters are discussed in Section 5.1.

Surficial and subsurface soils are generally composed of very fine-grained to medium-grained quartz sand. The sand is variable in color. White to light gray to light brown sand appears to be the most common in the site area. Occasionally, thin peat layers were encountered. The peat layers appear to vary from less than 1 foot to greater than 5 feet in thickness, and were encountered at depths varying from 5 to 17 feet bls. The peat layers are discontinuous and appear to result in the existence of perched water tables in some parts of the site. Complete lithologic logs for all site soil borings and monitoring wells are presented in Appendix B.

## 4.0 METHODOLOGIES AND EQUIPMENT

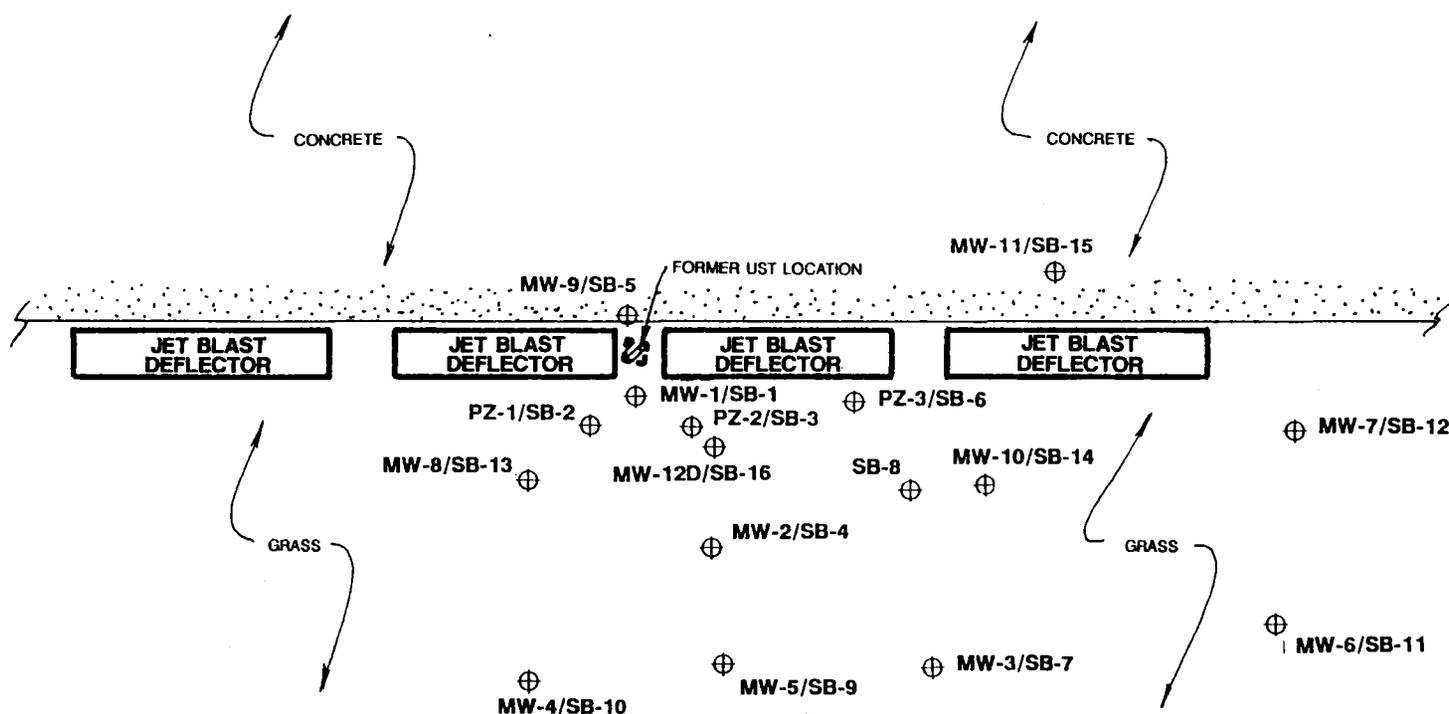
4.1 SOIL BORING AND SOIL SAMPLING PROGRAM. Sixteen soil borings, SB1 through SB16, were drilled at the site to assess the extent and levels of soil petroleum contamination, to identify the type of subsurface material, and to aid in the subsequent placement of groundwater monitoring wells. Soil boring locations are shown in Figure 4-1. Composite soil samples collected from split-spoon standard penetration tests (SPTs) were analyzed for petroleum constituents with an organic vapor analyzer (OVA) equipped with a flame ionization detector (FID). Additional soil samples were collected at the locations of selected site monitoring wells. These samples were sent to Wadsworth/Alert Laboratories in Tampa, Florida, for total metals analyses. The results of the soil boring program and soil sampling program are discussed in Section 5.2.

4.2 MONITORING WELL INSTALLATION PROGRAM. Eleven 2-inch inside diameter (ID), shallow, permanent monitoring wells (PEN-3221NE-MW1 through PEN-3221NE-MW11; designated as MW1 through MW11 on figures and tables in this report) were installed in 11 soil borings at the site. In addition, 2-inch ID temporary, shallow piezometers (PEN-3221NE-PZ1 through PEN-3221NE-PZ3; designated as PZ1 through PZ3 on figures and tables) were installed in three of the soil borings at the site. The shallow wells and piezometers were screened in the upper portion of the surficial zone, at depths of 5 to 15 feet bls. A deep permanent monitoring well (PEN-3221NE-MW12D; designated as MW12D on figures and tables) was installed in soil boring SB16, which is located downgradient of the former UST location. The deep well was screened at a depth of 30 to 35 feet bls, to assess the vertical extent of contamination near the former UST location. No well was installed in soil boring SB8. Monitoring well locations are shown in Figure 4-1. Monitoring well construction methodologies and materials are discussed in Appendix C.

4.3 GROUNDWATER ELEVATION SURVEY. The elevation and slope of the water table were determined by surveying the top of the well casing for each monitoring well to a common reference datum using a surveyor's level and stadia rod. Elevations were referenced to a benchmark located on a culvert near the southwest corner of Building 3221. This benchmark is part of the U.S. Coastal and Geodetic Survey benchmarking system and has an elevation of 27.46 feet above the National Geodetic Vertical Datum (NGVD) of 1929.

Groundwater level measurements were collected on February 27 and March 30, 1992. Procedures for groundwater level measurements are described in Appendix C.

4.4 GROUNDWATER SAMPLING PROGRAM. Groundwater samples were collected from permanent monitoring wells at the site on February 27, 1992. Duplicate samples were collected from wells PEN-3221NE-MW4 and PEN-3221NE-MW8. Monitoring wells PEN-3221NE-MW6, and PEN-3221NE-MW9 through PEN-3221NE-MW11, were resampled on April 15, 1992. The samples were sent to Wadsworth/Alert Laboratories in Tampa, Florida, for analysis. A laboratory blank, equipment blank, and trip blank were also collected and analyzed. Procedures for collection of groundwater samples are presented in Appendix C.



**LEGEND**

⊕ MONITORING WELL/PIEZOMETER/SOIL BORING LOCATION



**FIGURE 4-1  
MONITORING WELL AND  
SOIL BORING LOCATIONS**



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**4.5 AQUIFER SLUG TESTS.** Three rising head slug tests were performed in each of the monitoring wells PEN-3221NE-MW6, PEN-3221NE-MW9, PEN-3221NE-MW10, and PEN-3221NE-MW12D to assess the hydraulic conductivity of the surficial zone of the sand-and-gravel aquifer. Procedures for conducting slug tests are included in Appendix C. Slug test data graphs and calculations are attached in Appendix D.

## 5.0 CONTAMINATION ASSESSMENT RESULTS

**5.1 SITE-SPECIFIC AQUIFER CHARACTERISTICS AND HYDROGEOLOGIC PARAMETERS.** The surficial zone of the sand-and-gravel aquifer is the primary water-bearing zone of concern at the site. The surficial zone is unconfined, and the water table was encountered at depths of approximately 6 to 10 feet bls.

Depth to groundwater level measurements in site monitoring wells were collected on February 27 and March 30, 1992. Water level data are shown in Table 5-1 and were used to construct water table elevation contour maps to assess the direction of groundwater flow at the site.

**Table 5-1  
Top of Casing and Groundwater Elevations,  
February 27 and March 30, 1992**

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Well Number	February 27, 1992			March 30, 1992		
	TOC	DTW	Groundwater Elevation	TOC	DTW	Groundwater Elevation
MW1	23.68	7.82	15.86	23.68	6.86	16.82
MW2	23.29	7.15	16.14	23.29	7.86	15.43
MW3	19.89	5.89	14.00	19.89	6.30	13.59
MW4	21.05	6.87	14.18	21.05	7.26	13.79
MW5	20.89	5.71	15.18	20.89	6.50	14.39
MW6	20.39	6.46	13.93	20.39	6.88	13.51
MW7	21.81	7.84	13.97	21.81	8.26	13.55
MW8	24.17	9.92	14.25	24.17	10.26	13.91
MW9	23.79	9.58	14.21	23.79	9.99	13.80
MW10	22.72	8.70	14.02	22.72	9.11	13.61
MW11	22.43	8.41	14.02	22.43	8.81	13.62
MW12D	23.63	9.52	14.11	23.63	9.93	13.70

Notes: TOC = top of casing.  
DTW = depth to water.

Water table elevations were significantly higher in monitoring wells PEN-3221NE-MW1, PEN-3221NE-MW2, and PEN-3221NE-MW5 than in the remaining site wells. For example, water table elevation measurements obtained on February 27, 1992, indicate that water table elevations in these three wells vary from 15.18 to 16.14 feet above msl (Table 5-1). The other nine wells at the site have water table elevations ranging from 13.93 to 14.25 feet above msl.

Large differences in water table elevations over small horizontal distances were observed in the vicinity of the former UST location. For example, a difference of 1.65 feet in the water table elevation was observed between monitoring wells PEN-3221NE-MW1 and PEN-3221NE-MW9 over a horizontal distance of approximately 15 to 20 feet. These differences in water table elevations indicate the presence of extremely high hydraulic gradients in very localized areas. These gradients suggest the presence of perched water tables. The presence of peat layers in each of the three "abnormal" wells indicates that perched water may be a plausible explanation for high water table elevations observed in these wells.

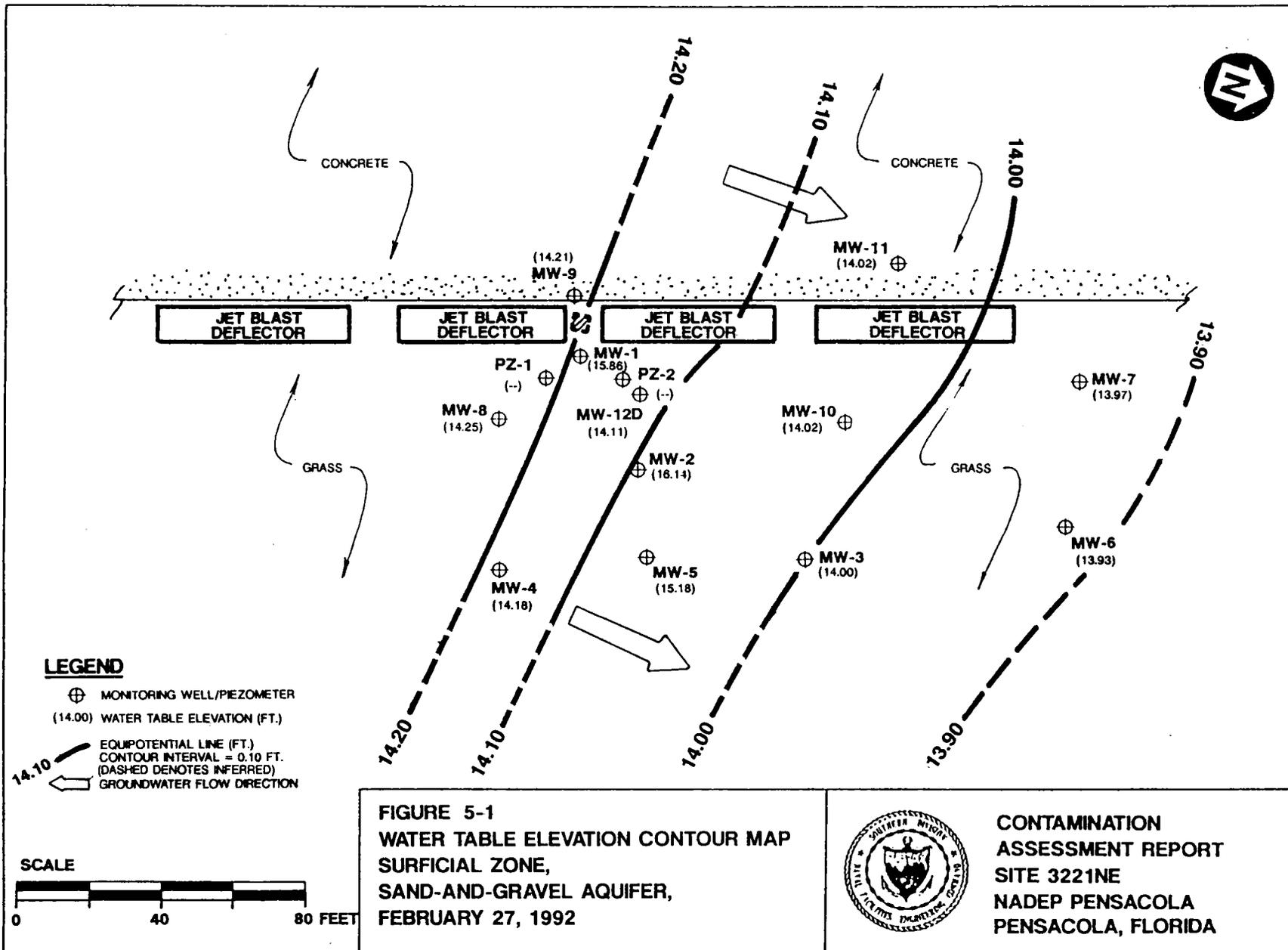
Water table elevation contour maps for the February 27 and March 30, 1992, measurements are shown in Figures 5-1 and 5-2, respectively. Both maps indicate a northerly flow direction in the surficial zone. Water table elevations from the three "perched water" wells are indicated on each figure, but are not used in water table elevation contouring, nor have water table elevations from these wells been used to estimate additional aquifer parameters.

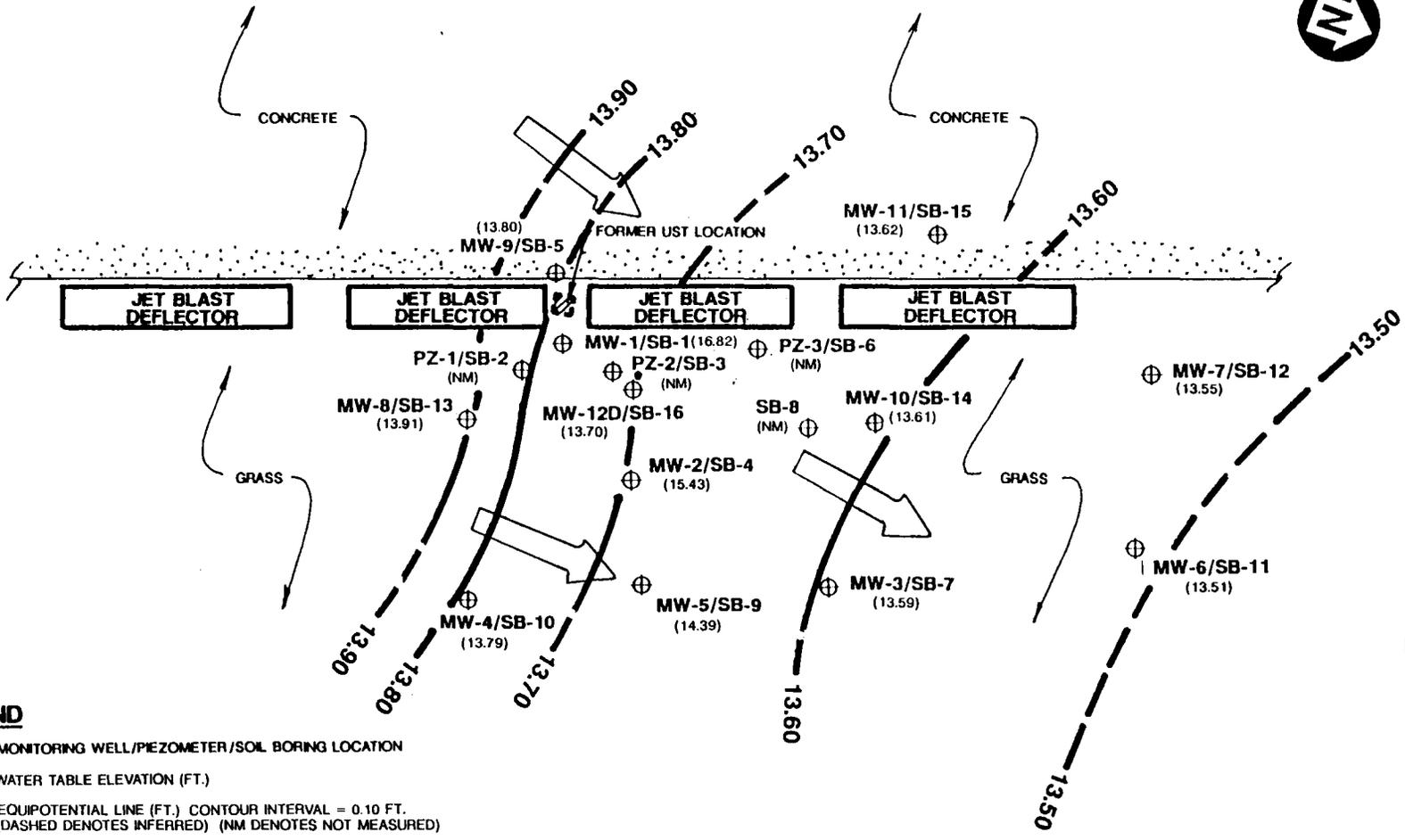
The average hydraulic gradient across the site is  $2.5 \times 10^{-3}$  feet per foot (ft/ft). Slug test results indicate that the average horizontal hydraulic conductivity (K) is  $5.1 \times 10^1$  feet per day (ft/day). The calculated pore water velocity (V) is  $5.1 \times 10^{-1}$  ft/day. Equations and calculations used to estimate these values are presented in Appendix D.

## 5.2 CONTAMINANT PLUME DEFINITION AND CHARACTERIZATION.

5.2.1 Soil Contamination Composite soil samples were collected from SPT samples from January 8 to February 7, 1992, at depths of 5 to 7 feet bls, and were analyzed using OVA headspace techniques. On March 30, 1992, additional soil samples were collected adjacent to selected site monitoring wells, at depths of 4 to 7 feet bls, and were submitted to Wadsworth/Alert Laboratories in Tampa, Florida, for total metals analysis. Summaries of the OVA and total metals analyses are presented in Tables 5-2 and 5-3, respectively. Soil contamination distribution at the site is depicted in Figure 5-3.

No petroleum odors or discoloration were noted in the SPT soil samples. No volatile organic compounds (VOC) were detected in soil borings SB1/MW1 through SB6/PZ3, SB8, and SB11/MW6. A minimal amount of VOC (less than 10 ppm) was detected in samples SB7/MW3, SB9/MW5, SB12/MW7, and SB13/MW8. These concentrations are well below the organic petroleum standard concentration of 10 ppm for "clean" soil (FDER, May 1992). The highest recorded OVA reading was 25 ppm and was measured in the sample collected at SB10/MW4. Sample location SB10/MW4 is located approximately 35 feet from the former UST location. The water table elevation in SB10/MW4 is approximately equal to that observed at the former UST area (Figures 5-1 and 5-2). The source of the VOC contamination in





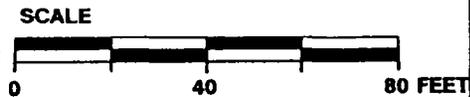
**LEGEND**

⊕ MONITORING WELL/PIEZOMETER/SOIL BORING LOCATION

(13.80) WATER TABLE ELEVATION (FT.)

— EQUIPOTENTIAL LINE (FT.) CONTOUR INTERVAL = 0.10 FT.  
(DASHED DENOTES INFERRED) (NM DENOTES NOT MEASURED)

⇨ GROUNDWATER FLOW DIRECTION



**FIGURE 5-2**  
**WATER TABLE ELEVATION CONTOUR MAP**  
**SURFICIAL ZONE,**  
**SAND-AND-GRAVEL AQUIFER,**  
**MARCH 30, 1992**



**CONTAMINATION**  
**ASSESSMENT REPORT**  
**SITE 3221NE**  
**NADEP PENSACOLA**  
**PENSACOLA, FLORIDA**

**Table 5-2  
Summary of Soil Sample Organic Vapor Analyzer (OVA) Headspace Analyses,  
January 8 through February 7, 1992**

Contamination Assessment Report  
Site 3221NE, Naval Aviation Depot  
Pensacola, Florida

Boring Designation	Depth (feet)	Concentration <sup>1</sup> (ppm)	Comments
MW1/SB1	5 to 7	0	No odor and no discoloration
PZ1/SB2	5 to 7	0	No odor and no discoloration
PZ2/SB3	5 to 7	0	No odor and no discoloration
MW2/SB4	5 to 7	0	No odor and no discoloration
MW9/SB5	5 to 7	0	No odor and no discoloration
PZ3/SB6	5 to 7	0	No odor and no discoloration
MW3/SB7	5 to 7	2	No odor and no discoloration
SB8	5 to 7	0	No odor and no discoloration
MW5/SB9	5 to 7	6	No odor and no discoloration
MW4/SB10	5 to 7	25	No odor and no discoloration
MW6/SB11	5 to 7	0	No odor and no discoloration
MW7/SB12	5 to 7	4	No odor and no discoloration
MW8/SB13	5 to 7	3	No odor and no discoloration
MW10/SB14	5 to 7	NM	No odor and no discoloration
MW11/SB15	5 to 7	NM	No odor and no discoloration
MW12D/SB16	5 to 7	NM	No odor and no discoloration

<sup>1</sup> Corrected for methane

Notes: ppm = parts per million.  
NM = not measured.

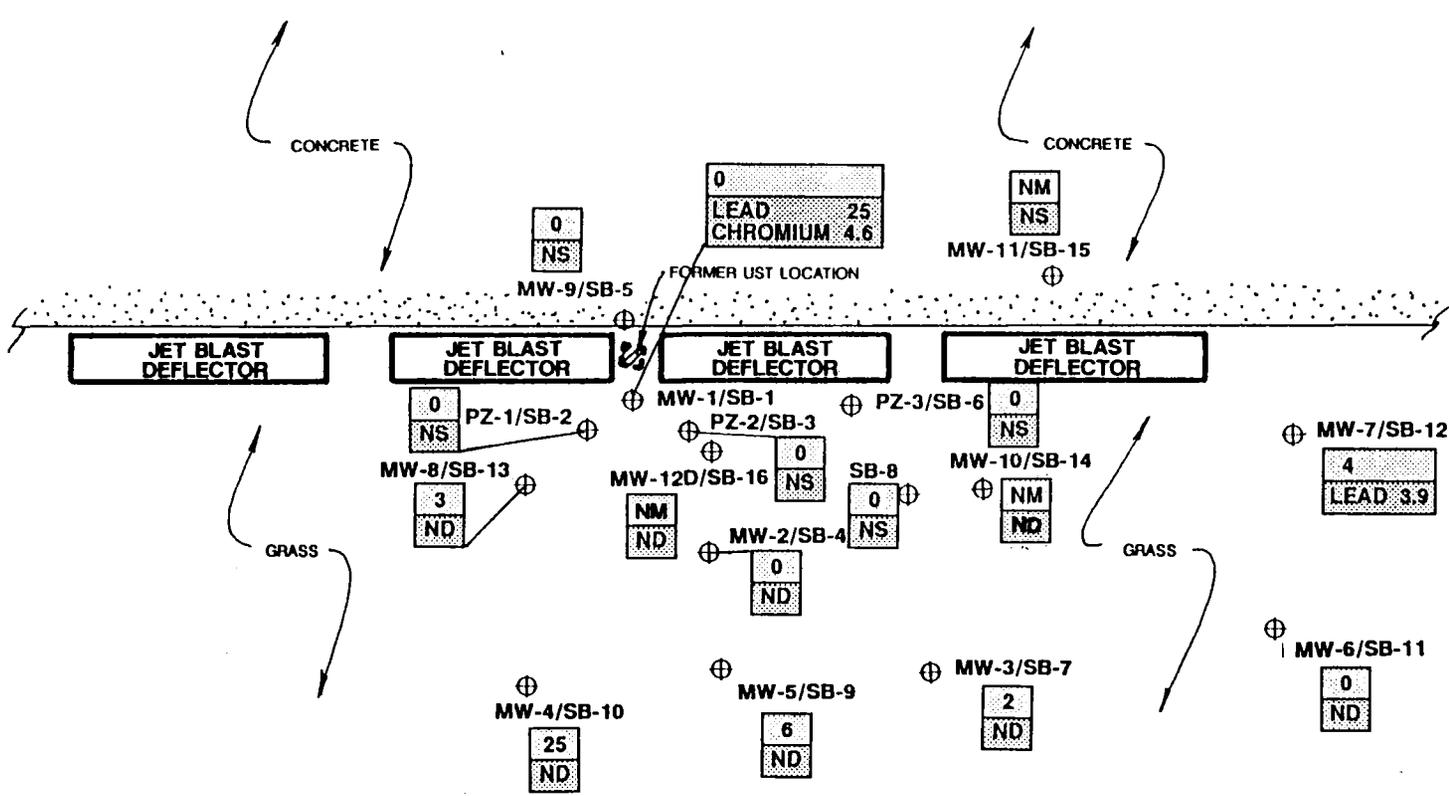
**Table 5-3  
Summary of Soil Sample Laboratory Analyses,  
March 30, 1992**

Contamination Assessment Report  
Site 3221NE, Naval Aviation Depot  
Pensacola, Florida

Sample ID	Total Metals Analysis Concentration				
	Depth (feet)	Arsenic	Cadmium	Chromium	Lead
MW1/SB1	5	ND	ND	ND	16
MW1/SB1 duplicate	5	ND	ND	4.6	25
MW2/SB4	5.5	ND	ND	ND	ND
MW3/SB7	5.5	ND	ND	ND	ND
MW4/SB10	5	ND	ND	ND	ND
MW5/SB9	6	ND	ND	ND	ND
MW6/SB11	6	ND	ND	ND	ND
MW7/SB12	4	ND	ND	ND	3.9
MW8/SB13	5	ND	ND	ND	ND
MW9/SB5	NS	NS	NS	NS	NS
MW10/SB14	6	ND	ND	ND	ND
MW11/SB15	NS	NS	NS	NS	NS
MW12D/SB16	7	ND	ND	ND	ND
State regulatory level		55	55	275	77

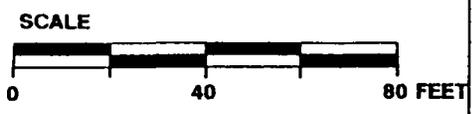
Concentrations are in parts per million.

Notes: NS = not sampled.  
ND = not detected.



**LEGEND**

- ⊕ MONITORING WELL/PIEZOMETER/SOIL BORING LOCATION
- OVA READING (ppm)
- METALS (ppm)
- (ND DENOTES NOT DETECTED)
- (NM DENOTES NOT MEASURED)
- (NS DENOTES NOT SAMPLED)



**FIGURE 5-3**  
**SOIL CONTAMINATION**  
**DISTRIBUTION MAP**  
**JANUARY 8 Through MARCH 30, 1992**



**CONTAMINATION**  
**ASSESSMENT REPORT**  
**SITE 3221NE**  
**NADEP PENSACOLA**  
**PENSACOLA, FLORIDA**

this area is not known, but does not appear to be from a discharge from the former UST. Furthermore, VOC contamination in the vicinity of SB10/MW4 does not appear to be laterally extensive.

Total metals soil laboratory analyses are presented in Appendix E. These analyses indicate the presence of chromium and lead in samples collected from boring locations SB1/MW1 and SB12/MW7. Lead was detected in the sample and duplicate sample collected at the former UST location, SB1/MW1, at concentrations of 16 ppm and 25 ppm, respectively. Lead was also detected in the sample collected at SB12/MW7 at a concentration of 3.9 ppm. Chromium was detected at SB1/MW1 at a concentration of 4.6 ppm. The observed concentrations of chromium and lead in site soils are well below the State regulatory standards of 275 ppm and 77 ppm, respectively.

Because: (1) "de minimus" concentrations of petroleum contaminants were identified in soils at the site, and (2) total metals concentrations are well below State regulatory standards, it does not appear that soil contamination poses an environmental or health risk at the site.

**5.2.2 Groundwater Assessment** In some areas near NAS Pensacola, the surficial zone of the sand-and-gravel aquifer has been demonstrated to be hydraulically connected with the main producing zone of the sand-and-gravel aquifer, making potable water supplies susceptible to contamination in these areas (Roaza and others, 1991). For this reason, the surficial zone at NAS Pensacola will be herein treated as a Class G-II groundwater source, and Class G-II groundwater State regulatory standards will be applied throughout this report.

Groundwater samples were collected from site monitoring wells on February 27, 1992. Samples were submitted to Wadsworth/Alert Laboratories in Tampa, Florida, for VOC analysis by U.S. Environmental Protection Agency (USEPA) Method 624, base-neutral and acid-extractable analysis by USEPA Method 625, total metals analysis, and TRPH analysis. These analyses were performed for constituents of the waste oil group as outlined in Chapter 17-770, FAC. Groundwater analytical data are attached in Appendix E. Duplicate samples were collected from wells PEN-3221NE-MW4 and PEN-3221NE-MW8. These are designated as Duplicate 1 and Duplicate 2, respectively.

Monitoring well PEN-3221NE-MW10 was resampled on April 15, 1992, to verify the compounds and concentrations of contaminants detected in the February 27, 1992, sample. Monitoring wells PEN-3221NE-MW6, PEN-3221NE-MW9, and PEN-3221NE-MW11 were also resampled on April 15, 1992, for USEPA Method 624 analysis because the 14 day holding time for the February 27, 1992, samples were exceeded. For these wells, the USEPA Method 624 analyses from the April 15, 1992, sampling event are included in Appendix E.

Petroleum constituents identified include ethylbenzene, toluene, xylenes, naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, and TRPH. Non-petroleum contaminants identified in groundwater samples are methylene chloride, acetone, 1,2-dichloroethene, and trichloroethene. A total of 39 tentatively identified compounds and six unidentified compounds were also detected in groundwater samples.

Groundwater contaminants identified and their concentrations are summarized in Table 5-4. Tentatively identified compounds and their estimated concentrations are summarized in Table 5-5. Figure 5-4 is a groundwater contamination distribution map showing the areal extent of contamination at the site. Piezometers PZ1 through PZ3 are not shown on Figure 5-4 since they were not sampled. Soil boring SB8 is also not shown since it was abandoned. Analyses for both sampling events for well PEN-3221NE-MW10 are also shown.

Methylene chloride exceeded State regulatory standards in samples collected from six monitoring wells. Trichloroethene and total VOA (the sum of benzene, ethylbenzene, toluene, and xylenes) were detected only in the samples collected from monitoring well PEN-3221NE-MW10. The reported concentrations of these contaminants exceeded State regulatory standards. No other groundwater contaminants identified at the site exceeded State regulatory standards.

Methylene chloride concentrations in the six samples exceeding State regulatory levels varied from 7 parts per billion (ppb) to 39 ppb. Methylene chloride is a common laboratory contaminant. Its presence in the February 27, 1992, equipment blank, and the large discrepancy in concentrations between samples MW-8 and MW-8 duplicate indicate that its presence in the groundwater samples is the result of laboratory contamination. Because: (1) the methylene chloride contamination at the site can be attributed to laboratory contamination, and (2) methylene chloride was not detected in downgradient wells, PEN-3221NE-MW6, PEN-3221NE-MW7, and PEN-3221NE-MW11, it does not appear that methylene chloride is a contaminant of concern.

Acetone was detected in only the samples collected from wells PEN-3221NE-MW2 and PEN-3221NE-MW8. The reported concentrations of 79 ppb and 53 ppb, respectively, are well below the State regulatory guidance concentration of 700 ppb (FDER, February 1989). Furthermore, acetone is a common laboratory contaminant. Its presence in these two groundwater samples does not appear to be significant.

The compound 1,2-dichloroethene was detected in the samples collected from monitoring wells PEN-3221NE-MW6 and PEN-3221NE-MW10. Each sample contained a reported concentration of 3 ppb, which is below the State guidance concentration of 4.2 ppb (FDER, February 1989). Because: (1) concentrations did not exceed State guidance concentrations and (2) this compound was not detected in downgradient wells, it does not appear to be a contaminant of concern at the site.

TRPH were detected in the sample collected from well PEN-3221NE-MW2 and the duplicate sample collected from well PEN-3221NE-MW8. The reported concentrations of 1 ppm and 4 ppm, respectively are below the State regulatory standard of 5 ppm. Because TRPH were not detected in samples collected from other site wells and thus, appear to have a limited areal extent, TRPH do not appear to be of concern at the site.

**Table 5-4  
Summary of Groundwater Sample Laboratory Analyses,  
February 27 and April 15, 1992**

Contamination Assessment Report  
Site 3221NE, Naval Aviation Depot  
Pensacola, Florida

Compound	State Regulatory/ Guidance Concentration	MW1	MW2	MW3	MW4	MW4 Dupli- cate	MW5	MW6 <sup>1</sup>	MW7	MW8
Methylene chloride	5	ND	8	7	7	39	8	ND	ND	ND
1,2-Dichloroethene (total)	4.2	ND	ND	ND	ND	ND	ND	3	ND	ND
Trichloroethene	3	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene		ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene		ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylene (total)		ND	ND	ND	ND	ND	ND	ND	ND	ND
Total VOA	50	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone <sup>3</sup>	700	79	ND	ND	ND	ND	ND	ND	ND	53
Naphthalene		ND	ND	ND	ND	ND	ND	ND	ND	ND
1-Methylnaphthalene		ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene		ND	ND	ND	ND	ND	ND	ND	ND	ND
Total naphthalenes	100	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRPH	5	ND	4	ND	ND	ND	ND	ND	ND	ND

See notes at end of table.

**Table 5-4 (Continued)**  
**Summary of Groundwater Sample Laboratory Analyses,**  
**February 27 and April 15, 1992 Sampling Events**

Contamination Assessment Report  
 Site 3221NE, Naval Aviation Depot  
 Pensacola, Florida

Compound	State Regulatory/ Guidance Concentra- tion	MW8 Dupli- cate	MW9 <sup>1</sup>	MW10	MW10 <sup>2</sup>	MW11 <sup>1</sup>	MW12D	Equip- ment Blank	Trip Blank	Lab Blank
Methylene chloride	5	25	ND	ND	ND	ND	28	ND	ND	3
1,2-Dichloroethene (total)	3	ND	ND	3	ND	ND	ND	ND	ND	ND
Trichloroethene	3	ND	ND	5	ND	ND	ND	ND	ND	ND
Ethyl benzene		ND	ND	40	44	ND	ND	ND	ND	ND
Toluene		ND	ND	1	ND	ND	ND	ND	ND	ND
Xylene (total)		ND	ND	30	92	ND	ND	ND	ND	ND
Total VOA	50	ND	ND	71	136	ND	ND	ND	ND	ND
Acetone <sup>3</sup>	700	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene		ND	ND	13	16	ND	ND	ND	ND	ND
1-Methylnaphtha- lene		ND	ND	7	7	ND	ND	ND	ND	ND
2-Methylnaph- thalene		ND	ND	6	6	ND	ND	ND	ND	ND
Total naphthalenes	100	ND	ND	26	29	ND	ND	ND	ND	ND
TRPH	5	1	ND	ND	ND	ND	ND	ND	ND	ND

<sup>1</sup>Resampled on 4/15/92 for 624 parameters.

<sup>2</sup>Resampled on 4/15/92 for all parameters.

<sup>3</sup>Guidance Concentration (Florida Department of Environmental Regulation [FDER], February, 1989).

**Notes:** All concentrations are in parts per billion, except total recoverable petroleum hydrocarbons (TRPH), which is in parts per million.

ND = not detected.

total VOA = total volatile organic aromatics; the sum of benzene, ethyl benzene, toluene, and xylenes.

TRPH = total recoverable petroleum hydrocarbons.

Total naphthalenes = the sum of naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.

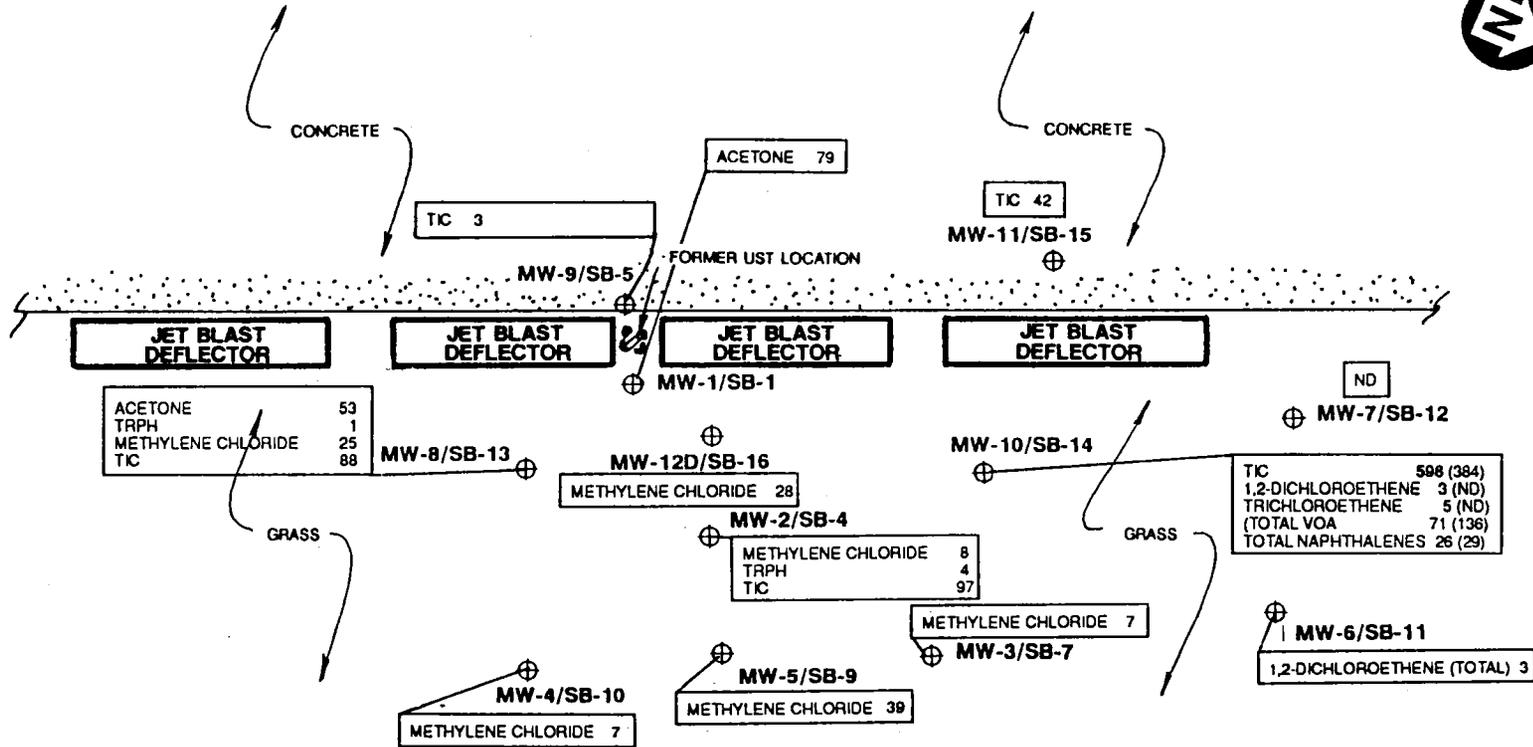
**Table 5-5  
Tentatively Identified Compounds and Their Estimated Concentrations,  
February 27 and April 15, 1992**

Contamination Assessment Report  
Site 3221NE, Naval Aviation Depot  
Pensacola, Florida

	MW2	MW8	MW8 Duplicate	MW9	MW10	MW10 <sup>1</sup>	MW11
1,2-Dichloro-1,1,2-trifluoroethane	ND	ND	ND	3	ND	ND	23
1,2-Dimethyl-benzene	ND	ND	ND	ND	ND	57	ND
1,3-Dimethyl-benzene	ND	ND	ND	ND	200	ND	ND
Propyl benzene	ND	ND	ND	ND	10	11	ND
1-Ethyl-2-methyl-benzene	ND	ND	ND	ND	60	44	ND
1-Ethyl-3-methyl-benzene	ND	ND	ND	ND	18	89	ND
1-Ethyl-4-methyl-benzene	ND	ND	ND	ND	42	32	ND
1-Ethyl-3,5-dimethyl-benzene	ND	ND	ND	ND	6	ND	ND
1-Ethyl-2,4-dimethyl-benzene	ND	ND	ND	ND	8	ND	ND
4-Ethyl-1,2-dimethyl-benzene	ND	ND	ND	ND	ND	12	ND
1,2,3-Trimethyl-benzene	ND	ND	ND	ND	110	29	ND
1,2,4-Trimethyl-benzene	ND	ND	ND	ND	39	21	ND
1,3,5-Trimethyl-benzene	ND	ND	ND	ND	19	29	ND
1,2,4,5-Tetramethyl-benzene	ND	ND	ND	ND	10	ND	ND
(1-Methylethyl)-benzene	ND	ND	ND	ND	36	11	ND
Methyl(1-methylethyl)-benzene	8	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenyl	9	ND	ND	ND	ND	ND	ND
1,4-Dimethyl-2(1-methylethyl)benzene	5	ND	ND	ND	ND	ND	ND
Unknown substituted benzene	9	ND	ND	ND	ND	12	ND
1,2,4,5-Tetramethyl-benzene	4	ND	ND	ND	ND	ND	ND
Unknown substituted benzene	12	ND	ND	ND	ND	ND	ND
1-Methyl-3-propyl benzene	ND	ND	ND	ND	12	ND	ND
1-Methyl-2-(1-methylethyl)-benzene	5	ND	ND	ND	13	9	ND
1-Methyl-3-(1-methylethyl)-benzene	ND	ND	ND	ND	15	15	ND
1-Methyl-4-(1-methylethyl)-benzene	10	ND	ND	ND	ND	ND	ND
(1) Unknown	8	ND	ND	ND	ND	ND	ND
(3) Unknown	ND	59	ND	ND	ND	ND	ND
1-(1,1-Dimethylethyl)4-methyl-benzene	4	ND	ND	ND	ND	ND	ND
3-Methyl-undecane	ND	ND	18	ND	ND	ND	ND
5-Methyl-undecane	ND	ND	11	ND	ND	ND	ND
2,6-Dimethyl-undecane	8	ND	ND	ND	ND	ND	ND
2,3,6-Trimethyl-octane	10	ND	ND	ND	ND	ND	ND
9-Octyl-heptadecane	5	ND	ND	ND	ND	ND	ND
4-Methyl benzoic acid-2-oxo-2-phenylethyl ester	ND	ND	ND	ND	ND	13	ND
2,3,4-Trimethyl pentane	ND	ND	ND	ND	ND	ND	1
3,3-Dimethyl hexane	ND	ND	ND	ND	ND	ND	4
(1,1-Dimethylethyl) benzene	ND	ND	ND	ND	ND	ND	2
1,2-Diethyl benzene	ND	ND	ND	ND	ND	ND	2
2,3-Dihydro-1-methyl-1H-indene	ND	ND	ND	ND	ND	ND	1
2-Butenyl benzene	ND	ND	ND	ND	ND	ND	2
2,3-Dihydro-1,1-dimethyl-1H-indene	ND	ND	ND	ND	ND	ND	4
(1-Methyl-1-propenyl) benzene	ND	ND	ND	ND	ND	ND	2
1,2,3,4-Tetrahydro-1,4-methoronaphthalene-9-ol	ND	ND	ND	ND	ND	ND	1
<b>Total concentration of tentatively identified compounds</b>	<b>97</b>	<b>59</b>	<b>29</b>	<b>3</b>	<b>598</b>	<b>384</b>	<b>42</b>

<sup>1</sup>April 15, 1992 sampling event.

Notes: ND = not detected.  
All results are in parts per billion.



**LEGEND**

- ⊕ MONITORING WELL/PIEZOMETER/SOIL BORING LOCATION
- CONTAMINATION (ppb)
- TRPH Reported in ppm and DENOTES TOTAL RECOVERABLE PETROLEUM HYDROCARBONS
- (ND DENOTES NOT DETECTED) (NS DENOTES NOT SAMPLED)
- (TIC DENOTES TENTATIVELY IDENTIFIED OR UNIDENTIFIED COMPOUNDS)
- FOR MW-10, CONCENTRATIONS No.s in ( ) DENOTES APRIL 15, 1992 SAMPLING.



**FIGURE 5-4**  
**GROUNDWATER CONTAMINATION**  
**DISTRIBUTION MAP**  
**FEBRUARY 27 & APRIL 15, 1992**



**CONTAMINATION**  
**ASSESSMENT REPORT**  
**SITE 3221NE**  
**NADEP PENSACOLA**  
**PENSACOLA, FLORIDA**

The most contaminated well at the site is well PEN-3221NE-MW10. This well is located approximately 80 feet downgradient of the former UST location. As previously mentioned, this well was sampled on two occasions, February 27, 1992, and April 15, 1992. Contaminants detected in the sample collected on February 27, 1992, and not identified in any other site wells, were trichloroethene, ethylbenzene, toluene, xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene. Trichloroethene and total VOA (the sum of benzene, ethylbenzene, toluene, and xylenes) concentrations exceeded State regulatory standards in this sample. The concentrations of total naphthalenes (the sum of naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene) were below State regulatory standards in samples collected on both dates.

The reported trichloroethene concentration of 5 ppb for the February 27, 1992, sample does not greatly exceed the State regulatory standard of 3 ppb. Trichloroethene was not detected in wells PEN-3221NE-MW6 and PEN-3221NE-MW7, which are located farther downgradient of PEN-3221NE-MW10. Furthermore, trichloroethene was not detected in the sample collected from well PEN-3221NE-MW10 on April 15, 1992, indicating that trichloroethene contamination is of limited areal extent and does not appear to be a concern at the site.

The total VOA concentration for the February 27, 1992, sample from PEN-3221NE-MW10 was 71 ppb. The April 15, 1992, sample indicated an increase in total VOA concentration to 136 ppb. No VOA constituents were detected in any other site wells, including downgradient wells PEN-3221NE-MW6 and PEN-3221NE-MW7. Despite the apparent increase in total VOA concentration in the latter sampling event, it appears that these contaminants are of limited areal extent, and do not appear to be migrating off the site.

A total of 39 tentatively identified compounds and six unidentified compounds were detected in groundwater samples collected from monitoring wells PEN-3221NE-MW2, and PEN-3221NE-MW8 through PEN-3221NE-MW11. The tentatively identified compounds generally appear to be fuel constituents or probable fuel degradation products. These compounds and their estimated concentrations are shown in Table 5-5. Regulatory or guidance standards have not yet been established for these compounds.

The highest concentrations of tentatively identified and unidentified compounds were found in the samples collected from well PEN-3221NE-MW10. The February 27, 1992, sample collected from this well contained 15 tentatively identified compounds with a total estimated concentration of 598 ppb. The April 15, 1992, sample showed a decrease to 14 compounds with a total estimated concentration of 384 ppb.

The total concentrations of tentatively identified compounds or unidentified compounds did not exceed 100 ppb in any other site well. Tentatively identified compounds were not detected in the farthest downgradient site wells, PEN-3221NE-MW6 and PEN-3221NE-MW7.

Two tentatively identified compounds and three unidentified compounds were detected in the sample collected from well PEN-3221NE-MW2. The total estimated concentration of these compounds is 97 ppb. Only one compound, an unidentified substituted benzene, had an estimated concentration in excess of 10 ppb.

Three unidentified compounds were detected in the sample collected from well PEN-3221NE-MW8 with a total estimated concentration of 59 ppb. Two compounds, 3-methylundecane and 5-methylundecane, were tentatively identified in the duplicate sample obtained from this well with an estimated concentration of 18 ppb and 11 ppb, respectively.

Only one tentatively identified compound was detected in the sample obtained from well PEN-3221NE-MW9. The compound 1,2-dichloro-1,1,2-trifluoroethane had an estimated concentration of 3 ppb in this sample.

Ten tentatively identified compounds were detected in the sample collected from well PEN-3221NE-MW11. The total estimated concentrations of these compounds was 42 ppb. The compound 1,2-dichloro-1,1,2-trifluoroethane had an estimated concentration of 23 ppb. The other nine compounds had estimated concentrations of 4 ppb or less.

In summary, analytical data indicate groundwater contamination at the site is not significant. Methylene chloride contamination appears to be the result of laboratory contamination. Trichloroethene was detected at concentrations just above State regulatory standards in the February 27, 1992, sample from well PEN-3221NE-MW10; however, this compound was not detected in the April 15, 1992, sample, nor was it detected in any other samples. Methylene chloride was the only contaminant detected in the deep well installed at the site, PEN-3221NE-MW12D, and the contaminant is believed to be a laboratory artifact. This well is located immediately downgradient to the former UST area; thus, it appears that the vertical extent of contamination less than 30 feet bls.

The only area of concern appears to be in the immediate vicinity of monitoring well PEN-3221NE-MW10, located approximately 80 feet downgradient of the former UST location. The most recent sample collected from this well exceeded the State regulatory standard for total VOA and contained relatively high concentrations of tentatively identified compounds. However, contaminants detected in this well were not detected in the downgradient wells PEN-3221NE-MW6 and PEN-3221NE-MW7; thus, it appears that groundwater contaminants in well PEN-3221NE-MW10 have not migrated from the site, and the areal extent of contamination appears to be relatively small.

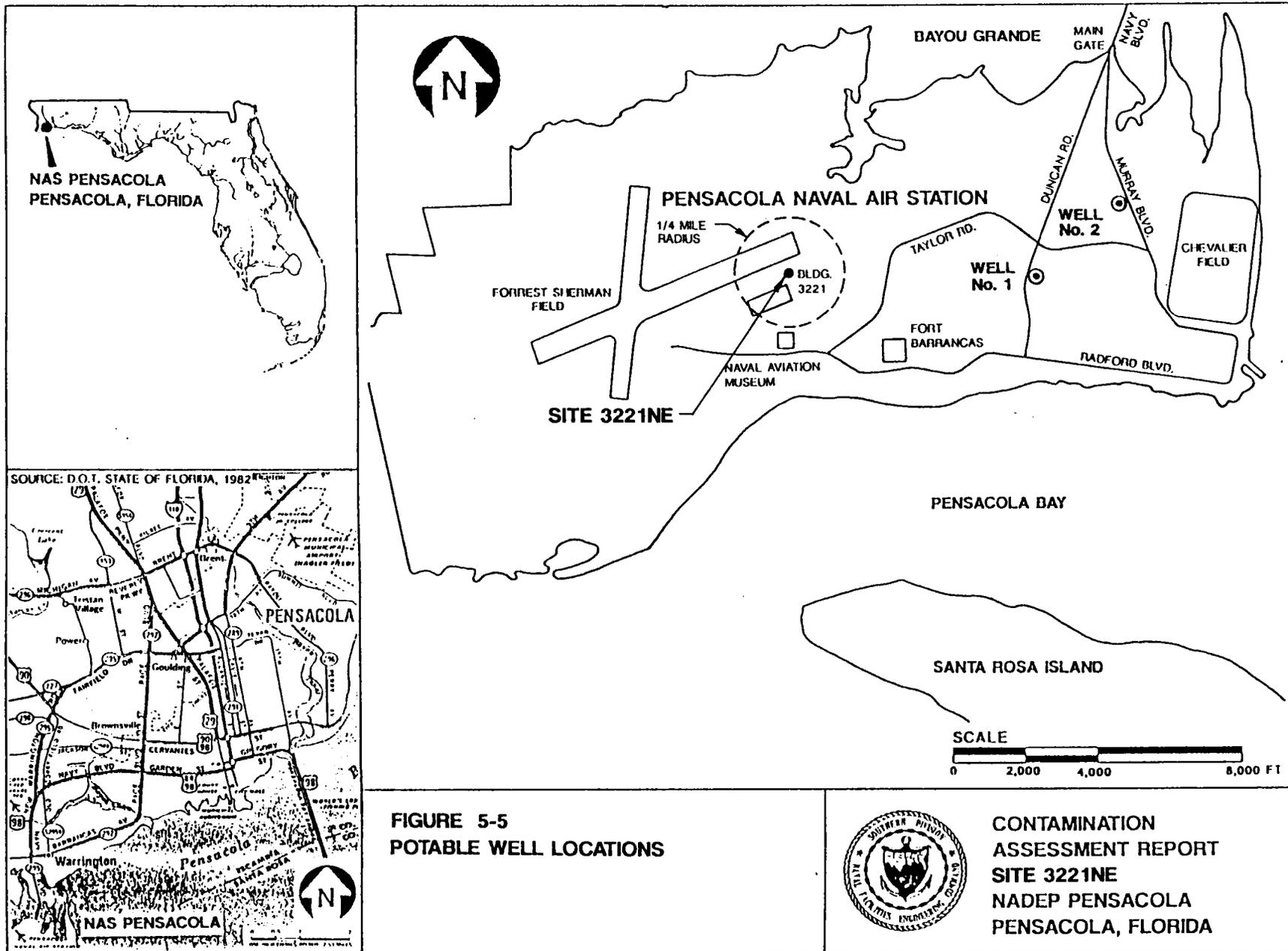
**5.3 POTABLE WELL SURVEY.** A potable well survey was conducted to assess the risk of contamination to potable water sources from activities at Site 3221NE. Two potable supply wells (designated as Well No. 1 and Well No 2 in Figure 5-5) exist at NAS Pensacola (Wilkins and others, 1985). The NAS Pensacola water supply system is used in conjunction with the Corry Field water supply system, which is located approximately 2 miles north of NAS Pensacola. According to NADEP personnel, these two wells are not currently used for potable water supplies at NAS Pensacola, but are available as reserve potable water supplies should the need arise.

Potable well inventory data are presented in Table 5-6. Both wells at NAS Pensacola are screened in the main producing zone of the sand-and-gravel aquifer at depths ranging from 105 to 160 feet bls. No well is located within a 0.25-mile radius of the site; therefore, the possibility of contamination of potable water sources from activities at Site 3221NE does not appear feasible.

**Table 5-6  
Potable Well Inventory Data,  
Naval Air Station, Pensacola Florida**

Contamination Assessment Report  
Site 3221NE, Naval Aviation Depot  
Pensacola, Florida

Well Identification Number/Local Name	Location	Total Depth (feet)	Screened Interval (feet)	Diameter Casing/Screen (inches)
302116087170201/No. 1	Sec. 1,T3S,R30W Duncan and Taylor Roads	174	105-160	24/12
302124087163601/No. 2	Sec. 1,T3S,R30W Murray and Farrar Roads	178	110-160	24/12



NAS PENSACOLA  
PENSACOLA, FLORIDA

PENSACOLA NAVAL AIR STATION

FORREST SHERMAN  
FIELD

1/4 MILE  
RADIUS

BLDG.  
3221

NAVAL AVIATION  
MUSEUM

SITE 3221NE

BAYOU GRANDE

MAIN  
GATE

NAVY  
BLVD.

WELL  
No. 2

MURRAY BLVD.

CHEVALIER  
FIELD

TAYLOR RD.

WELL  
No. 1

FORT  
BARRANCAS

RADFORD BLVD.

PENSACOLA BAY

SANTA ROSA ISLAND

SCALE

0 2,000 4,000 8,000 FT

SOURCE: D.O.T. STATE OF FLORIDA, 1982

PENSACOLA

NAS PENSACOLA

FIGURE 5-5  
POTABLE WELL LOCATIONS



CONTAMINATION  
ASSESSMENT REPORT  
SITE 3221NE  
NADEP PENSACOLA  
PENSACOLA, FLORIDA

## 6.0 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

6.1 SUMMARY. Based on the results of the field investigations and the laboratory analytical results collected during this investigation, the following is a summary of conditions at the site.

- The sediments encountered during drilling operations are generally comprised of very fine-grained to medium-grained quartz sand. These sediments are part of the surficial zone of the sand-and-gravel aquifer (Roaza and others, 1991).
- Groundwater beneath the site was encountered at depths of approximately 6 to 10 feet bls and is classified as G-II.
- The direction of groundwater flow in the surficial zone is to the north.
- The average hydraulic gradient across the site is  $2.5 \times 10^{-3}$  ft/ft.
- The average hydraulic conductivity at the site is  $5.1 \times 10^1$  ft/day.
- The average pore water velocity is  $5.1 \times 10^{-1}$  ft/day.
- OVA headspace analyses indicated minimal petroleum contamination in soils at the site. Only one sample exceeded the petroleum standard for "clean" soil, and no excessively petroleum-contaminated soils were identified at the site.
- Chromium and lead were identified in soil samples collected at the site, but concentrations of each were below State regulatory levels for total metals analysis.
- Compounds identified in groundwater samples at the site include methylene chloride, trichloroethene, 1,2-dichloroethene, acetone, ethylbenzene, toluene, xylenes, naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, and TRPH. The groundwater contamination does not extend to 30 feet bls in the vicinity of the former UST location.
- Methylene chloride concentrations exceeded State regulatory standards in samples from six monitoring wells; however, the presence of methylene chloride appears to be the result of laboratory contamination.
- Total VOA concentrations exceeded State regulatory standards in samples collected from only one site well, PEN-3221NE-MW10. The extent of petroleum contamination appears to be restricted to the immediate vicinity of this well.
- The 39 tentatively identified compounds and 6 unidentified compounds do not appear to be of major concern outside the immediate area of well PEN-3221NE-MW10.
- The apparent source of contamination, the former UST, has been removed from the site.

- The apparent source of contamination, the former UST, has been removed from the site.
- Because no potable water sources were identified within a 0.25-mile radius of the site, there appears to be little risk of contamination of the public water supply system from activities at the site.

**6.2 CONCLUSIONS.** The level of soil and groundwater contamination identified at Site 3221NE does not appear to be significant and is not anticipated to affect local potable water supplies on the base. The only area of concern appears to be the groundwater in the immediate vicinity of well PEN-3221NE-MW10. Groundwater contaminants do not appear to be migrating from the site, and were detected in concentrations that are not anticipated to present a significant health or environmental concern at the site.

**6.3 RECOMMENDATIONS.** Based on the findings and interpretations of this contamination assessment, a *Monitoring Only Plan (MOP)* is herewith submitted for Site 3221NE. This plan recommends the quarterly groundwater sampling of all site monitoring wells. Samples would undergo VOC analysis by USEPA Method 624, base-neutral and acid-extractable analysis by USEPA Method 625, and TRPH analysis. Total metals analysis would be excluded from the monitoring program, because no metals were detected in any samples collected from site wells, and the level of soil metals contamination at the site appears to be minimal. Quarterly groundwater monitoring would continue for a period of one year, or until contamination decreases to levels that are acceptable to the State regulatory agency.

## 7.0 PROFESSIONAL REVIEW CERTIFICATION

The contamination assessment contained in this report was prepared using sound hydrogeologic principles and judgment. This assessment is based on the geologic investigation and associated information detailed in the text and appended to this report. If conditions are determined to exist that differ from those described, the undersigned geologist should be notified to evaluate the effects of any additional information on the assessment described in this report. This Contamination Assessment Report was developed for the UST located at Site 3221NE at the Naval Aviation Depot, Naval Air Station, Pensacola, Florida, and should not be construed to apply to any other site.

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Roger Durham  
Professional Geologist  
P.G. No. 001127

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Date

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**APPENDIX A**  
**SITE CONDITIONS**

## Regional and Local Physiography

Florida is divided into four physiographic zones; the Coastal Lowlands, the Central Highlands, the Northern Highlands, and the Marianna Lowlands (Puri and Vernon, 1964). The Pensacola area lies entirely within the Coastal Lowlands zone, which closely parallels the Florida coastline. The Coastal Lowlands are further divided into the Atlantic, Distal, and Gulf Coastal Lowlands (Puri and Vernon, 1964). The Naval Aviation Depot (NADEP) Pensacola falls within the Gulf Coastal Lowlands. The lowlands are characterized by poor drainage and elevations less than 100 feet above mean sea level. Landforms include barrier islands, estuaries, coastal ridges, dunes, and valleys (Puri and Vernon, 1964).

Land surface altitudes at NADEP Pensacola range from sea level at the coast to greater than 30 feet above sea level. Surface drainage is variable, but is generally toward the nearest body of water.

## Regional Hydrogeology

NADEP Pensacola is underlain by three water bearing zones. These zones include the sand-and-gravel aquifer, the Upper Floridan Aquifer, and the Lower Floridan Aquifer.

The sand-and-gravel aquifer is comprised of Pleistocene terrace deposits, the Pliocene Citronelle Formation (Marsh, 1966), and Miocene coarse clastics. These deposits extend from the surface to a depth of approximately 400 feet below land surface (bls) and are predominantly poorly sorted, fine-grained to coarse-grained sands interbedded with numerous layers of clay and gravel (up to 60 feet thick). There is great lithologic variability in these deposits. Clay lenses and the presence of hardpan layers within the sand-and-gravel aquifer result in the occurrence of perched water tables and artesian conditions in some areas (Musgrove and others, 1965). Groundwater flow is generally topographically controlled. Recharge to the aquifer is derived almost entirely from local rainfall. The sand-and-gravel aquifer is the sole source of potable groundwater in the Pensacola area (Roaza and others, 1991).

The sand-and-gravel aquifer is divided into three major zones: the surficial zone, the low permeability zone, and the main producing zone (Roaza and others, 1991). These designations are based on changes in permeability of the sediments comprising each zone. The surficial zone is the uppermost layer of the aquifer. It consists primarily of sand and gravel with occasional silt and clay deposits. This zone ranges in thickness from 0 to 150 feet (Roaza and others, 1991). The low permeability zone, which underlies the surficial zone, consists of various mixtures of clay, silt, sand, and gravel. Locally, this zone contains poorly sorted sands, with gravel and some clay (Roaza and others, 1991). The thickness of the zone varies from 50 to 100 feet. Individual beds of the low permeability zone are highly discontinuous, and in some areas there may be hydraulic connection between the surficial zone and the main producing zone. The main producing zone is composed of moderate to well sorted sand-and-gravel beds that are typically interbedded with beds of fine-grained sand and clay. Locally, this zone typically contains medium-grained sands and sandy clays (Roaza and others, 1991). The thickness of the main producing zone ranges from 200 to 300 feet. The Upper Floridan Aquifer is comprised of deposits correlative to the lower Miocene Tampa Formation and the upper Oligocene Chickasawhay Formation. These

two formations are undifferentiated in the Pensacola area. Locally these deposits are approximately 380 feet thick (Marsh, 1966) and are typically brown to light gray, hard, fossiliferous dolomitic limestones or dolomites with a distinctive spongy-looking texture. Locally, the overlying Pensacola Clay is approximately 1,000 feet thick and forms an effective confining unit between the sand-and-gravel aquifer and the Upper Floridan aquifer (Marsh, 1966). This confining unit has also been designated as part of the Intermediate System (Roaza and others, 1991). The Upper Floridan aquifer is recharged by local rainfall in Conecuh, Escambia, and Monroe Counties, Alabama (Healy, 1980). General groundwater flow in the Upper Floridan aquifer is to the southeast toward the Gulf of Mexico (Barr, 1987). The groundwater in the Upper Floridan aquifer is mineralized in this area and is not used as a water supply.

The Lower Floridan aquifer is comprised of upper to middle Eocene limestones. The aquifer is approximately 500 feet thick in the vicinity (Marsh, 1966). The limestones are typically white to grayish cream, soft, and chalky. The Lower Floridan aquifer is confined from above by the Bucatunna Clay Member of the middle Oligocene Byram Formation and from below by gray shales and clays of middle Eocene age. The Bucatunna Clay, also called the Intermediate Zone, is approximately 170 feet thick in the vicinity (Musgrove and others, 1965). Groundwater flow in the aquifer is to the southeast toward the Gulf of Mexico (Healy, 1980). The water quality is poor because of high mineralization.

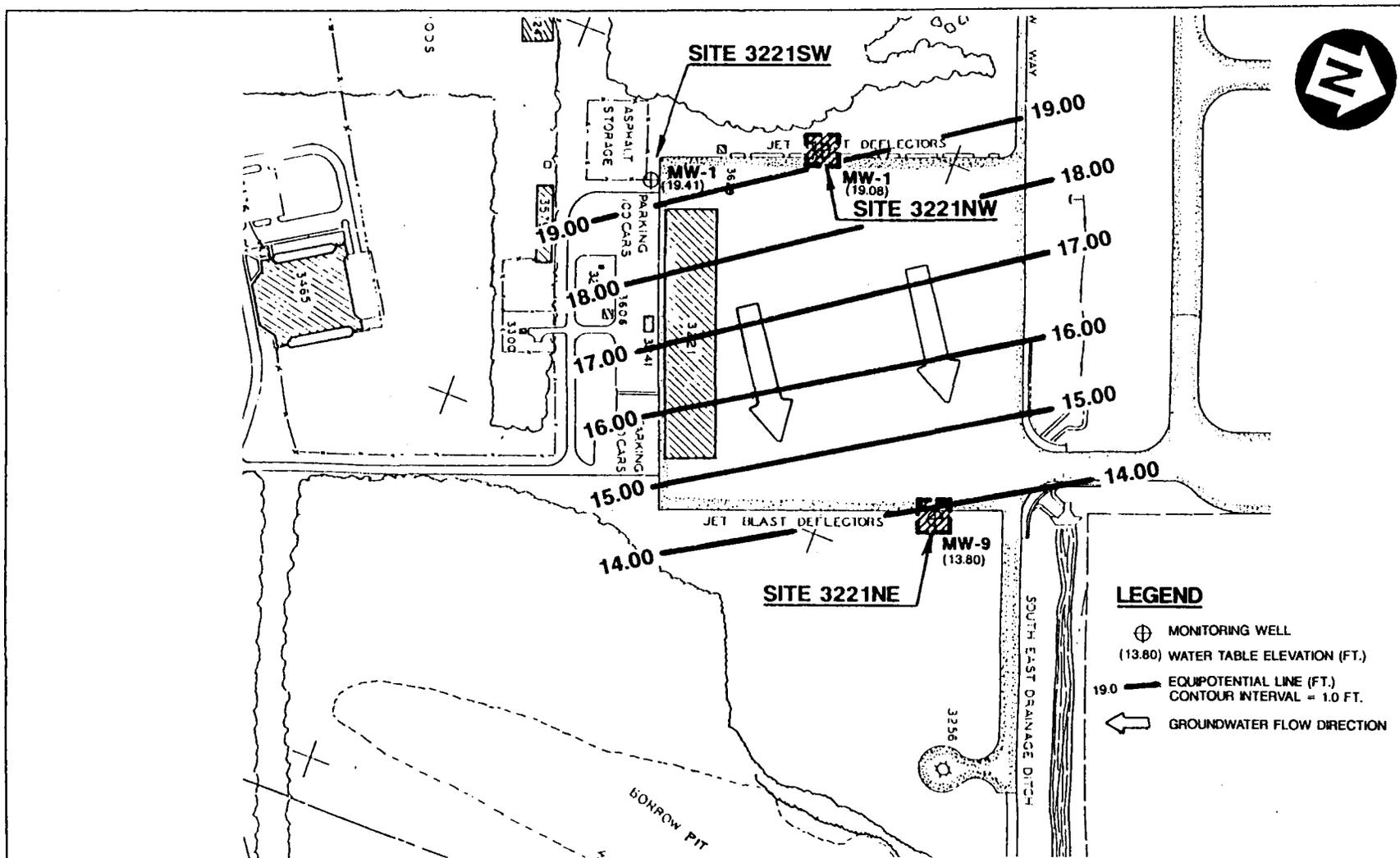
### Local Hydrogeology

The surficial zone of the sand-and-gravel aquifer is the interval of primary concern at NAS Pensacola. The surficial zone extends from the surface to a depth of approximately 100 feet bls. Soils from 0 to 50 feet bls are generally composed of fine- to very fine-grained sands, with very little silt and clay. Occasional coarse-grained sands to fine-grained gravels were found with the fine- to very fine-grained sands, and thin peat layers were found at NAS Pensacola in the Sherman Field vicinity.

Groundwater in the surficial zone is non-artesian and is encountered at depths of less than 2 feet bls to greater than 20 feet bls at the NADEP facility. The depth to groundwater is mainly controlled by topography. Recharge is predominantly from local rainfall.

Figure A-1 shows the groundwater flow direction in the site vicinity on March 30, 1992, based on measurements taken from three monitoring wells at Sites 3221NE, 3221NW, and 3221SW. The direction of groundwater flow in the Building 3221 vicinity appears to be to the east. Perched water tables were observed at Site 3221NE and apparently result from the presence of peat layers.

Locally, hydraulic gradients in the surficial zone vary from approximately  $1 \times 10^{-3}$  feet per foot (ft/ft) to  $7 \times 10^{-3}$  ft/ft. Gradients are generally less in the lower flat-lying areas than those in the topographically higher areas. Water level measurements, taken on numerous occasions at low-elevation sites located near Pensacola Bay, indicate that tidal fluctuations do not appear to alter the groundwater flow direction and do not appear to significantly affect the hydraulic gradients observed at NAS Pensacola.



**FIGURE A-1**  
**3221 COMPLEX**  
**WATER TABLE ELEVATION CONTOUR MAP**  
**MARCH 30, 1992**



**CONTAMINATION**  
**ASSESSMENT REPORT**  
**SITE 3221NE**  
**NADEP PENSACOLA**  
**PENSACOLA, FLORIDA**

Slug tests performed on select wells at the 18 sites at the NADEP facility indicate that the sediments of the surficial zone are highly conductive and transmissive. Table A-1 summarizes results of the slug tests. Average hydraulic conductivities in the surficial zone at NAS Pensacola were found to vary from approximately 7.2 feet per day (ft/day) to  $9.0 \times 10^1$  ft/day.

**Table A-1**  
**Average Hydraulic Conductivities**  
**Calculated From Slug Test Data, NADEP Pensacola**

Contamination Assessment Report  
 Site 3221NE, Naval Aviation Depot  
 Pensacola, Florida

Site/Well Number	Total Depth	Screened Interval (feet)	K (ft/day)
PEN-604S-MW6	13.00	3.00-13.00	2.1x10 <sup>1</sup>
PEN-604S-MW11	13.45	3.45 - 13.45	2.9x10 <sup>1</sup>
PEN-604S-MW12D	31.71	26.71 - 31.71	3.2x10 <sup>1</sup>
PEN-607NE-MW5	12.87	2.87 - 12.87	7.2
PEN-647N-MW2	26.63	16.63 - 26.63	2.5x10 <sup>1</sup>
PEN-647N-MW8D	40.05	35.05 - 40.05	5.7x10 <sup>1</sup>
PEN-648N-MW3	26.95	16.95 - 26.95	2.8x10 <sup>1</sup>
PEN-648N-MW5D	50.48	45.48 - 50.48	9.0x10 <sup>1</sup>
PEN-648N-MW6	27.01	17.01 - 27.01	3.0x10 <sup>1</sup>
PEN-648N-MW9	27.67	17.67 - 27.67	1.8x10 <sup>1</sup>
PEN-649N-MW4D	36.78	31.78 - 36.78	4.0x10 <sup>1</sup>
PEN-649N-MW8	26.78	16.78 - 26.78	0.7x10 <sup>1</sup>
PEN-649W-MW1	25.75	15.75 - 25.75	2.9x10 <sup>1</sup>
PEN-649W-MW6D	40.63	35.63 - 40.63	7.6x10 <sup>1</sup>
PEN-709DN-MW3	25.15	15.15 - 25.15	3.7x10 <sup>1</sup>
PEN-709DN-MW6D	34.50	29.50 - 34.50	6.8x10 <sup>1</sup>
PEN-709DN-MW10	25.08	15.08 - 25.08	2.6x10 <sup>1</sup>
PEN-2662W-MW1	<sup>1</sup> 12.00	2.00 - 12.00	4.8x10 <sup>1</sup>
PEN-2662W-MW2	<sup>1</sup> 12.00	2.00 - 12.00	4.4x10 <sup>1</sup>
PEN-3220S-MW6	27.55	17.55 - 27.55	3.5x10 <sup>1</sup>
PEN-3220S-MW9D	45.27	40.27 - 45.27	4.6x10 <sup>1</sup>
PEN-3221NE-MW6	14.86	4.86 - 14.86	4.3x10 <sup>1</sup>
PEN-3221NE-MW9	14.98	4.98 - 14.98	3.0x10 <sup>1</sup>
PEN-3221NE-MW10	15.02	5.02 - 15.02	2.6x10 <sup>1</sup>
PEN-3221NE-MW12D	34.69	29.69 - 34.69	1.0x10 <sup>1</sup>
PEN-3221NW-MW1	14.85	4.85 - 14.85	4.1x10 <sup>1</sup>
PEN-3221SW-MW1	14.91	4.91 - 14.91	4.0x10 <sup>1</sup>
PEN-3450S-MW2	24.90	14.90 - 24.90	5.5x10 <sup>1</sup>
PEN-3450W-MW1	25.55	15.55 - 25.55	2.2x10 <sup>1</sup>
PEN-3557S-MW1	13.00	3.00 - 13.00	1.7x10 <sup>1</sup>
PEN-3810N-MW4	13.00	3.00 - 13.00	5.5x10 <sup>1</sup>
PEN-3810N-MW6	13.00	3.00 - 13.00	4.9x10 <sup>1</sup>
PEN-3810N-MW10D	19.65	14.65 - 19.65	8.3x10 <sup>1</sup>

<sup>1</sup> Estimated depth.

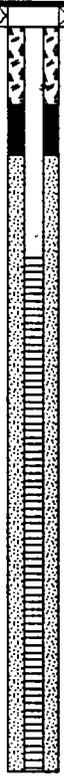
Notes: K = hydraulic conductivity, feet per day (ft/day).

**APPENDIX B**  
**LITHOLOGIC LOGS**

<b>TITLE:</b> NADEP Pensacola		<b>LOG of WELL:</b> 3221NE MW-1	<b>BORING NO.</b> SBI
<b>CLIENT:</b> SOUTHNAVFACENGCOM		<b>PROJECT NO:</b> 7527-30	
<b>CONTRACTOR:</b> Groundwater Protection Inc./Orlando, FL		<b>DATE STARTED:</b> 1/8/92	<b>COMPLTD:</b> 1/8/92
<b>METHOD:</b> HSA	<b>CASE SIZE:</b> 2 inch	<b>SCREEN INT.:</b> 5'-15'	<b>PROTECTION LEVEL:</b> D
<b>TOC ELEV.:</b> 23.88 FT.	<b>MONITOR INST.:</b> Porta Fid	<b>TOT DPTH:</b> 15FT.	<b>DPTH TO ∇ FT.</b>
<b>LOGGED BY:</b> R. Durham	<b>WELL DEVELOPMENT DATE:</b> 1/8/92		<b>SITE:</b> NADEP Pensacola

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY SAMPLE	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
0.0			0.0	SAND: Light-brown to orange-red, very fine to fine grained.		SP		
5		1.7/2	0.0	SAND: Light brown to tan to brown-red, fine to medium grained, some organics.		SP	2,2,2,3	
10		1.6/2	125.0	SAND: Brown to orange-red, fine to medium grained.		SP	2,2,2,2	
15		2.0/2	-	SAND: Dark brown, fine grained, some organics, mixed with peat-like material and plant roots, wet.		PT	13,18,24,31	
20								
25								

TITLE: NADEP Pensacola		LOG of WELL: 322INE MW-10	BORING NO. SB14
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 7527-30	
CONTRACTOR: Groundwater Protection Inc./Orlando, FL		DATE STARTED: 1/24/92	COMPLTD: 1/24/92
METHOD: HSA	CASE SIZE: 2 inch	SCREEN INT.: 5'- 15'	PROTECTION LEVEL: D
TOC ELEV.: 22.72 FT.	MONITOR INST.: Porta Fid	TOT DPTH: 27FT.	DPTH TO $\nabla$ FT.
LOGGED BY: A. Stamp	WELL DEVELOPMENT DATE: 1/24/92		SITE: NADEP Pensacola

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5			2.0/2		SAND: brown, fine to medium grained, some silt, some clay.		SM	POSTHOLE 1,1,1	
10			1.3/2		SAND: Light brown to grey, fine to medium grained, some silt, some clay, saturated at 10'.		SM	7,12,13,15	
15			0.5/2		SAND: Light grey, fine to medium grained, saturated.		SP	7,8,7,7	
20			0.8/2		SAND: Light grey, fine to medium grained, saturated.		SP	3,30,40,31	
25			0.8/2				SP	8,38,50,-	

TITLE: NADEP Pensacola		LOG of WELL: 3221NE MW-11	BORING NO. SB15
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 7527-30	
CONTRACTOR: Groundwater Protection Inc./Orlando,FL		DATE STARTED: 1/24/92	COMPLTD: 1/24/92
METHOD: HSA	CASE SIZE: 2 inch	SCREEN INT.: 5'-15'	PROTECTION LEVEL: D
TOC ELEV.: 22.43 FT.	MONITOR INST.: Porta Fid	TOT DPTH: 27FT.	DPTH TO $\nabla$ FT.
LOGGED BY: A. Stamp	WELL DEVELOPMENT DATE: 1/24/92		SITE: NADEP Pensacola

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY SAMPLE	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				CONCRETE				
				SAND: Tan to red, fine to medium grained, some silt, some clay.		SM		POSTHOLE
5		0.8/2		SAND: Light grey, fine to medium grained, some silt, some clay.			4,8,8,11	
10		0.5/2		SAND: Tan, fine to medium grained, some silt, some clay.			10,13,10,3	
15		1.0/2				SP	8,7,9,12	
20		1.0/2					14,9,12,24	
25		0.6/2		SAND: Light brownish-grey, very fine to fine grained.			17,34,50,-	

TITLE: NADEP Pensacola		LOG of WELL: 3221NE MW-12D	BORING NO. SB18
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 7527-30	
CONTRACTOR: Groundwater Protection Inc./Orlando, FL		DATE STARTED: 2/7/92	COMPLTD: 2/7/92
METHOD: HSA	CASE SIZE: 2 Inch	SCREEN INT.: 30'- 35'	PROTECTION LEVEL: D
TOC ELEV.: 23.83 FT.	MONITOR INST.: Porta Fid	TOT DPTH: 35FT.	DPTH TO $\nabla$ FT.
LOGGED BY: A. Stamp	WELL DEVELOPMENT DATE: 2/7/92		SITE: NADEP Pensacola

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5		1.3/2	0.0	SAND: Light grey to brown, fine to medium grained, some silt.		SM	POSTHOLE	
				SAND: Light grey, fine to medium grained, some mica, damp.		SP	3,7,8,8	
10		2.0/2	25.0	SAND W/ PEAT: Black, fine to medium grained, highly organic, saturated.		PT	1,1,1,1	
				SAND: Light brown, fine to medium grained, some organics, saturated.		SP	1,3,15,18	
15		1.8/2	27.0	SAND: Light grey to brown, fine to medium grained, some silt, saturated.		SM	2,3,5,14	
20		2.0/2	20.0	SAND: Light grey to brown, fine to medium grained, some silt, saturated.		SM	50,-,-,-	
25		2.0/2	30.0	SAND: Light grey to brown, fine to medium grained, some silt, saturated.		SM	27,50,-,-	
30		2.0/2	9.0	SAND: Light grey to brown, fine to medium grained, some silt, saturated.		SM	7,22,28,39	
35		1.2/2	0.0	SAND: Brown, fine to medium grained, some silt, organics, saturated.		SM		
40								

TITLE: NADEP Pensacola		LOG of WELL: 3221NE MW-2	BORING NO. SB4
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: 7527-30	
CONTRACTOR: Groundwater Protection Inc./Orlando, FL		DATE STARTED: 1/8/92	COMPLTD: 1/8/92
METHOD: HSA	CASE SIZE: 2 Inch	SCREEN INT.: 5'-15'	PROTECTION LEVEL: D
TOC ELEV.: 23.29 FT.	MONITOR INST.: Porta Fid	TOT DPTH: 15FT.	DPTH TO $\nabla$ FT.
LOGGED BY: R. Durham	WELL DEVELOPMENT DATE: 1/8/92		SITE: NADEP Pensacola

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY SAMPLE	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
0.0			0.0	SAND: Tan to orange-tan, very fine to fine grained.		SP		POSTHOLE
5		1.4/2	0.0	SAND: Light tan to light brown, very fine to fine grained, faint petroleum odor.		SP	2,5,7,8	
10		2.0/2	5.0	SAND: Tan to dark grey, very fine to fine grained, faint diesel odor. SANDY PEAT: Dark brown with dark grey sand, fine grained, organic odor.		PT SP	1,1,1	
15		1.2/2	17.0	SAND: Brown to light brown, organic odor, wet.		SP	15,27,38,35	
20								
25								

<b>TITLE:</b> NADEP Pensacola		<b>LOG of WELL:</b> 322INE MW-3	<b>BORING NO.</b> SB7
<b>CLIENT:</b> SOUTHNAVFACENGCOM		<b>PROJECT NO:</b> 7527-30	
<b>CONTRACTOR:</b> Groundwater Protection Inc./Orlando, FL		<b>DATE STARTED:</b> 1/9/92	<b>COMPLTD:</b> 1/9/92
<b>METHOD:</b> HSA	<b>CASE SIZE:</b> 2 Inch	<b>SCREEN INT.:</b> 5'-15'	<b>PROTECTION LEVEL:</b> 0
<b>TOC ELEV.:</b> 19.89 FT.	<b>MONITOR INST.:</b> Porta Fld	<b>TOT DPTH:</b> 15FT.	<b>DPTH TO ∇ FT.</b>
<b>LOGGED BY:</b> R. Durham	<b>WELL DEVELOPMENT DATE:</b> 1/9/92		<b>SITE:</b> NADEP Pensacola

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY SAMPLE	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				SAND: Orange-brown to light brown, very fine to fine grained.		SP		
5		2.0/2	2.0	SAND: Dark brown to tan-brown, very fine grained, some clay, organics.		SP	2,3,2,2	
10		1.0/2		SAND: Dark brown to off-white, very fine to fine grained, wet.		SP	5,11,17,17	
15		2.0/2	0.0	SAND: Off-white to light brown, very fine to fine grained, wet.		SP	8,15,27,25	
20								
25								

TITLE: NADEP Pensacola		LOG of WELL: 3221NE MW-4	BORING NO. SB10
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 7527-30	
CONTRACTOR: Groundwater Protection Inc./Orlando, FL		DATE STARTED: 1/10/92	COMPLTD: 1/10/92
METHOD: HSA	CASE SIZE: 2 inch	SCREEN INT.: 5'-15'	PROTECTION LEVEL: 0
TOC ELEV.: 21.05 FT.	MONITOR INST.: Porta Fid	TOT DPTH: 15FT.	DPTH TO $\nabla$ FT.
LOGGED BY: R. Durham	WELL DEVELOPMENT DATE: 1/10/92		SITE: NADEP Pensacola

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/8-IN	WELL DATA
				SAND: Orange-tan, very fine to fine grained.		SP		
5		1.4/2	25.0	SAND: Orange-brown, moist. PEAT: Dark brown, organic odor.		SP	2,2,3,3	
10		0.4/2	0.0	SAND: Tan to brown to dark brown, very fine to fine grained, organic odor, wet.		SP	5,5,4,5	
15		1.8/2	0.0	SAND: Brown, very fine to fine grained, mixed with some peat, organic odor, wet.		SP	13,13,17,18	
20								
25								

TITLE: NADEP Pensacola		LOG of WELL: 3221NE MW-5	BORING NO. SB9
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 7527-30	
CONTRACTOR: Groundwater Protection Inc./Orlando, FL		DATE STARTED: 1/10/92	COMPLTD: 1/10/92
METHOD: HSA	CASE SIZE: 2 Inch	SCREEN INT.: 5' - 15'	PROTECTION LEVEL: D
TOC ELEV.: 20.89 FT.	MONITOR INST.: Porta Fid	TOT DPTH: 15FT.	DPTH TO $\nabla$ FT.
LOGGED BY: R. Durham	WELL DEVELOPMENT DATE: 1/10/92		SITE: NADEP Pensacola

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY SAMPLE	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
0.0				SAND: Tan to orange-tan, very fine to fine grained.		SP		
5		2.0/2	8.0	SAND: Orange-brown to light brown, very fine to fine grained, wet at 8'.			3,3,4,3	
10		0.2/2	-	SAND: Dark brown, silty, peaty, organic odor, wet.		SM	2,1,2,2	
15		1.5/2	-	SAND: Brown, very fine to fine grained, organic odor, wet.		SM	8,24,28,20	
20								
25								

TITLE: NADEP Pensacola		LOG of WELL: 322INE MW-8	BORING NO. SB11
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 7527-30	
CONTRACTOR: Groundwater Protection Inc./Orlando, FL		DATE STARTED: 1/10/92	COMPLTD: 1/10/92
METHOD: HSA	CASE SIZE: 2 inch	SCREEN INT.: 5'-15'	PROTECTION LEVEL: D
TOC ELEV.: 20.39 FT.	MONITOR INST.: Porta Fid	TOT DPTH: 27FT.	DPTH TO $\nabla$ FT.
LOGGED BY: R. Durham	WELL DEVELOPMENT DATE: 1/10/92		SITE: NADEP Pensacola

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
0.0			0.0	SAND: Very dark brown, fine to medium grained.		SM	POSTHOLE	
5		1.5/2	0.0	SAND: Very dark brown to grey, fine to medium grained, highly organic, silty with some clay, damp.			5,8,7,7	
10		1.8/2	0.0	SAND: Tan to dark brown, fine to medium grained, highly organic, silty with some clay, saturated.			8,10,17,20	
15		2.0/2	0.0				10,17,18,18	
20		2.0/2	0.0	SAND: Brown to dark brown, fine to medium grained, some silt, some clay, saturated.			10,20,40,50	
25		1.8/2	0.0				28,55,-,-	
30								

TITLE: NADEP Pensacola		LOG of WELL: 3221NE MW-7	BORING NO. SB12
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: 7527-30	
CONTRACTOR: Groudwater Protection Inc./Orlando, FL		DATE STARTED: 1/10/92	COMPLTD: 1/10/92
METHOD: HSA	CASE SIZE: 2 inch	SCREEN INT: 5'-15'	PROTECTION LEVEL: D
TOC ELEV.: 21.81 FT.	MONITOR INST.: Porta Fid	TOT DPTH: 27FT.	DPTH TO $\nabla$ FT.
LOGGED BY: R. Durham	WELL DEVELOPMENT DATE: 1/10/92		SITE: NADEP Pensacola

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5		1.8/2	4.0	SAND: Light brown, medium to coarse grained.		SP		POSTHOLE
10		2.0/2	0.0	SAND: Light grey to dark brown, fine to medium grained, silty with some clay, saturated.		SM	5,7,8,11	
15		1.8/2	5.0			SM	12,12,10,30	
20		1.5/2	8.0	SAND: Light grey to dark brown, fine to medium grained, silty with some clay, saturated.		SM	18,30,50,-	
25		1.8/2	0.0	SAND: Light grey to dark brown, fine to medium grained, silty with some clay, saturated.		SM	7,13,10,23	

TITLE: NADEP Pensacola		LOG of WELL: 322INE MW-8	BORING NO. SB13
CLIENT: SOUTHNAVFACENCOM			PROJECT NO: 7527-30
CONTRACTOR: Groundwater Protection Inc./Orlando, FL		DATE STARTED: 1/13/92	COMPLTD: 1/13/92
METHOD: HSA	CASE SIZE: 2 inch	SCREEN INT.: 5'- 15'	PROTECTION LEVEL: D
TOC ELEV.: 24.17 FT.	MONITOR INST.: Porta Fid	TOT DPTH: 22FT.	DPTH TO $\nabla$ FT.
LOGGED BY: R. Durham	WELL DEVELOPMENT DATE: 1/13/92		SITE: NADEP Pensacola

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY SAMPLE	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
3.0						SP		
5		15/2	3.0	SAND: Light tan to orange brown, very fine to fine grained.			3,5,3,3	
10		0.5/2	-	SAND/PEAT: Fine to medium grained tan sand underlain by dark brown peat, wet.		PT	7,4,3,3	
15		2.0/2	-	PEAT: Dark brown, mixed with clayey brown sand, very fine to fine grained		SP	2,10,25,20	
20			-	SAND: Gray to brown, very fine to fine grained, wet.			10,30,50,-	
25								

TITLE: NADEP Pensacola		LOG of WELL: 3221NE MW-9	BORING NO. SB5
CLIENT: SOUTHNAVFACENCOM			PROJECT NO: 7527-30
CONTRACTOR: Groundwater Protection Inc./Orlando, FL		DATE STARTED: 1/9/92	COMPLTD: 1/9/92
METHOD: HSA	CASE SIZE: 2 Inch	SCREEN INT.: 5'- 15'	PROTECTION LEVEL: 0
TOC ELEV.: 23.79 FT.	MONITOR INST.: Porta Fid	TOT DPTH: 15FT.	DPTH TO $\nabla$ FT.
LOGGED BY: R. Durham	WELL DEVELOPMENT DATE: 1/9/92		SITE: NADEP Pensacola

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
0.0				CONCRETE				
0.0						SP		POSTHOLE
5		1.0/2	0.0	SAND: Light brown, medium grained, some mica.				4,9,10,18
10		1.8/2	28.0	PEAT: Dark brown to black, highly organic, wet in bottom of spoon.		PT		1,1,2,2
15		1.5/2	8.0	SAND: Brown, fine to medium grained, organic odor, wet.		SP		3,11,10,7
20								
25								

TITLE: NADEP Pensacola		LOG of WELL: 3221NE PZ-1	BORING NO. SB2
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: 7527-30	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 1/8/92	COMPLTD: 1/8/92
METHOD: HSA	CASE SIZE: 2 inch	SCREEN INT.: 8'- 18'	PROTECTION LEVEL: D
TOC ELEV.: 32.93 FT.	MONITOR INST.: Porta Fid	TOT DPTH: 18FT.	DPTH TO $\nabla$ FT.
LOGGED BY: R. Durham	WELL DEVELOPMENT DATE: NA		SITE: NADEP Pensacola

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
0.0				SAND: Tan to brown-orange, very fine to fine grained, some organics.		SP		
5		15/2	2.0	SAND: Tan to brown-orange, very fine to fine grained, no organics, damp at 7.			4,4,8,7	
10		2.0/2	-	SAND: Grey, fine grained, organics.			2,2,1,2	
15		12/2	75.0	PEAT: Dark brown, roots visible, underlain by brown sand, wet, organic odor.		PT		
				PEAT: Dark brown, roots visible, underlain by brown sand, wet, organic odor.			3,9,17,18	
20								
25								

TITLE: NADEP Pensacola		LOG of WELL: 322INE PZ-2	BORING NO. SB3
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: 7527-30	
CONTRACTOR: Groundwater Protection Inc./Orlando, FL		DATE STARTED: 1/8/92	COMPLTD: 1/8/92
METHOD: HSA	CASE SIZE: 2 inch	SCREEN INT.: 8'- 18'	PROTECTION LEVEL: D
TOC ELEV.: 32.20 FT.	MONITOR INST.: Porta Fld	TOT DPTH: 18FT.	DPTH TO $\nabla$ FT.
LOGGED BY: R. Durham	WELL DEVELOPMENT DATE: NA		SITE: NADEP Pensacola

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
0.0				SAND: Tan to light orange-tan, very fine to fine grained.		SP		
5		1.8/2	0.0	SAND: Off-white to light brownish-grey, very fine to fine grained.			3,4,6,8	POSTHOLE
10		2.0/2	15.0	SAND: Grey to light brown, very fine to fine grained, wet.		PT	2,1,1,1	
15		1.8/2	25.0	SANDY PEAT: Dark brown with dark grey sand, fine grained, organic odor.				
				SAND: Brown to light brown, very fine to fine grained, strong organic odor, wet.		SP	5,15,17,15	
20								
25								

TITLE: NADEP Pensacola		LOG of WELL: 322INE PZ-3	BORING NO. SB8
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: 7527-30	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 1/9/92	COMPLTD: 1/9/92
METHOD: HSA	CASE SIZE: 2 inch	SCREEN INT.: 8'- 18'	PROTECTION LEVEL: 0
TOC ELEV.: 31.83 FT.	MONITOR INST.: Porta Fid	TOT DPTH: 18FT.	DPTH TO $\nabla$ FT.
LOGGED BY: R. Durham	WELL DEVELOPMENT DATE: NA		SITE: NADEP Pensacola

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY SAMPLE	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/8-IN	WELL DATA
0.0			0.0	SAND: Tan to light yellow-brown, very fine to fine grained.		SP		POSTHOLE
5		1.8/2	0.0	SAND: Yellow-brown to orange-brown to off-white, very fine to fine grained.		SP	5,8,7,7	
10		1.5/2	330.0	SAND: Orange-brown to medium grey to off-white, organic odor.		SP	2,2,3,3	
15		1.0/2	-	SAND: Off-white, very fine to fine grained, organic odor.		SP	7,8,18,20	
20								
25								

TITLE: NADEP Pensacola		LOG of WELL: 322INE PZ-4	BORING NO. SB8
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: 7527-30	
CONTRACTOR: Groundwater Protection Inc./Orlando, FL		DATE STARTED: 1/9/92	COMPLTD: 1/9/92
METHOD: HSA	CASE SIZE: 2 Inch	SCREEN INT.: 8'-18'	PROTECTION LEVEL: 0
TOC ELEV.: 32.78 FT.	MONITOR INST.: Porta Fld	TOT DPTH: 18FT.	DPTH TO $\nabla$ FT.
LOGGED BY: R. Durham	WELL DEVELOPMENT DATE: NA		SITE: NADEP Pensacola

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
0				SAND: Orange-brown to light brown, very fine to fine grained.		SP		POSTHOLE
5		1.3/2	0.0	SAND: Light brown to grey, fine to medium grained, some mica.		SP	2,2,2,1	
10		1.5/2	0.0	SAND: Light grey, medium to coarse grained, saturated.		SP	4,9,14,14	
15		2.0/2	9.0	SAND: Off-white to light brown, very fine to fine grained, wet.		SP	13,24,34,30	
20		2.0/2	-	SAND: Light brown, very fine to fine grained, wet.			8,12,18,18	
25								

**APPENDIX C**  
**INVESTIGATIVE METHODOLOGIES AND PROCEDURES**

### Soil Boring Methods

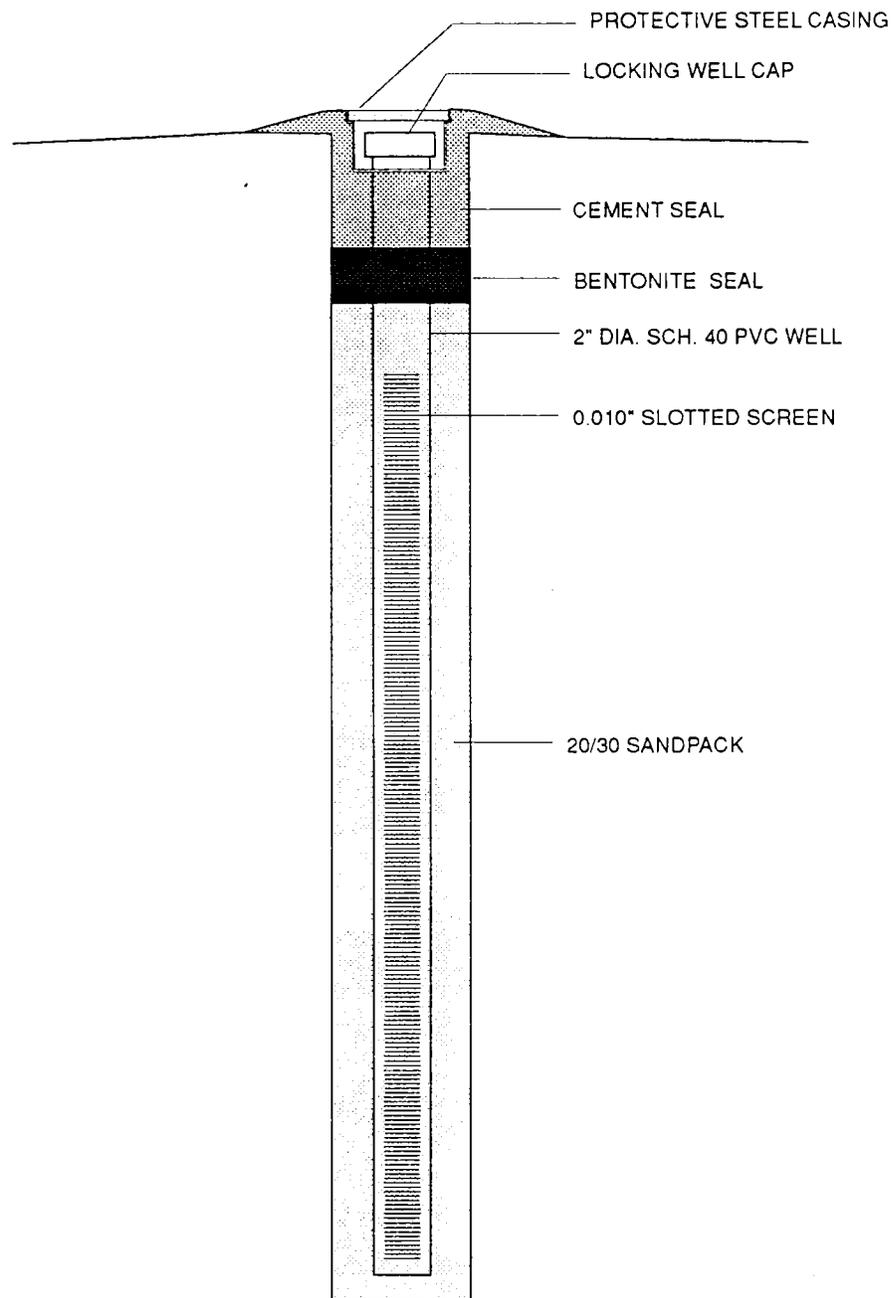
Boreholes were advanced using 4.25-inch inside diameter, hollow-stem augers using a rotary drill rig. Soil samples were collected from each borehole using a standard penetration test (SPT) split-spoon sampler. SPT samples were generally collected at 5-foot intervals to the total depth of the well. The soil samples collected above the water table were placed in 16-ounce glass jars and head space analyses were performed using an organic vapor analyzer (OVA) with a flame ionization detector (FID) following Florida Department of Environmental Regulation (FDER) Chapter 17-770.200(2), Florida Administrative Code (FAC) guidelines. Samples from below the water table were analyzed using a portable gas chromatograph (GC) calibrated to detect benzene, ethyl benzene, toluene, and xylene (BETX) to the part per billion (ppb) level. The purpose of the screening procedure was to optimize monitoring well placement during the investigation.

### Monitoring Well Construction

Monitoring wells were installed in many of the boreholes drilled at the NADEP facility. All monitoring wells installed during the investigation were constructed of 2-inch inner diameter, schedule 40, polyvinyl chloride (PVC) casing with flush-threaded joints and 0.010-inch machine-slotted screen. Shallow wells were constructed with 10 feet of screen. Deeper wells were constructed with 5 feet of screen. PVC well casings extend from the top of the screen to land surface. A 20/30 grade silica sand filter pack was placed in the annular space to approximately 2 to 3 feet above the top of the screen. A 1- to 2-foot thick bentonite seal was then placed on top of the filter pack. The remaining annular space was grouted to the surface with a neat cement grout. A protective traffic-bearing vault was installed to complete each well location. In concreted areas, the well pad consisted of 6-inch thick reinforced concrete around the traffic-bearing vault to the depth of the surrounding concrete. Each monitoring well is equipped with a locking well cap and a padlock. Figure C-1 depicts a typical shallow monitoring well installation for the site.

### Water Level Measurements

The groundwater levels were measured using an electric water level indicator and an engineering tape divided into increments of 0.01 foot. The wells were checked for the presence of free product by visual observation of a groundwater sample taken from each well using an extruded Teflon™ bailer. Water level elevations were calculated by subtracting the measured depth to groundwater from the elevation at the top of the well casing.



**FIGURE C-1**  
**MONITORING WELL**  
**CONSTRUCTION DIAGRAM**



**CONTAMINATION**  
**ASSESSMENT REPORT**  
**SITE 3221NE**  
**NADEP PENSACOLA**  
**PENSACOLA, FLORIDA**

### Groundwater Sampling

The groundwater samples were collected in accordance with ABB Environmental Services, Inc. (ABB-ES), Florida Department of Environmental Regulation (FDER)-approved Comprehensive Quality Assurance Plan (CompQAP). The monitoring wells were purged with a Teflon™ bailer. Purging continued until a minimum of three well volumes had been removed from the well. Groundwater samples were collected using an extruded Teflon™ bailer. The samples were placed into appropriate containers, properly preserved, and placed on ice. Samples were then shipped to Wadsworth/Alert Laboratories in Tampa, Florida. All groundwater samples collected were analyzed for constituents of the waste oil and unknown analytical group as outlined in FDER Chapter 17-770, Florida Administrative Code (FAC).

### Slug Test Procedures

The slug test developed by Bouwer and Rice (1976) permits the measurement of saturated hydraulic conductivity (K) within a single well. The test method used is known as a rising head test and is performed by quickly withdrawing a volume of water (slug) from the well and measuring the subsequent rate of rise of the water level in the well. Bouwer (1989) recommends the rising head slug test for wells with screened intervals that are only partially submerged into unconfined aquifers.

The slug was constructed of 1-inch outside diameter polyvinyl chloride (PVC) pipe, 5 feet in length, filled with sand, and capped watertight at both ends. The water level changes in the monitoring wells were recorded with a data logger and pressure transducer. The pressure transducer was suspended just above the bottom of the well and an initial water level was recorded prior to beginning the test. The slug was then lowered into the well until it was totally submerged beneath the water table. Water levels were then observed until recovery to the original level. Generally, recovery occurred within 3 to 4 seconds. Following stabilization, the slug was quickly removed with water level measurements recorded over time until the water level returned to the original level. Three rising head tests were conducted for each well in order to obtain an average recovery response.

**APPENDIX D**  
**AQUIFER PARAMETER CALCULATIONS**

## Aquifer Parameter Calculations

### Hydraulic gradient

Water table elevations were plotted on a water table contour map where flow lines (depicting groundwater flow direction) were drawn perpendicular to the groundwater elevation contours. The groundwater hydraulic gradient was calculated by subtracting the differences in groundwater elevation (in feet) between two points on the map and dividing the elevation difference by the distance between two points to obtain a resulting gradient in feet per foot. Water elevation data collected on February 27, and March 30, 1992, were used to calculate hydraulic gradients at the site. For each date, three traverses were made perpendicular to equipotential contour lines to calculate an average site hydraulic gradient. For each traverse, the hydraulic gradient was calculated as follows:

$$i = \frac{(h_1 - h_2)}{d} \quad (1)$$

where

- i = hydraulic gradient (feet per foot [ft/ft]),
- $h_1$  = water table elevation, upgradient (feet),
- $h_2$  = water table elevation, downgradient (feet), and
- d = horizontal distance (feet) between  $h_1$  and  $h_2$  along a flow line.

Hydraulic gradients calculated in this manner varied from  $2.3 \times 10^{-3}$  ft/ft to  $2.6 \times 10^{-3}$  ft/ft. The average hydraulic gradient at the site was calculated to be  $2.5 \times 10^{-3}$  ft/ft.

### Hydraulic conductivity

Hydraulic conductivity from data gathered in the slug tests was calculated following the methods of Bouwer and Rice (1976) and Bouwer (1989) for partially penetrating wells screened in unconfined aquifers. The following well information was needed to assess the hydraulic conductivity:

- radius of well casing ( $r_c$ ),
- radius of borehole ( $r_w = r_c$  plus radial thickness of the sand pack surrounding the well screen),
- length of screened interval below the water table ( $L_s$ ),
- effective well radius ( $r_e$ ),
- depth of well below the water table ( $L_w$ ),
- depth to confining unit or bottom of aquifer below the static water table (H), and

- plot of time versus the logarithm of y, where y is the difference between the static water level outside the well and the water level inside the well.

Figure D-1 is a well diagram depicting many of the above listed parameters. Calculations were made assuming that  $L_w < H$ . Hydraulic conductivity, K, was calculated from the above parameters as follows:

$$K = [r_c^2 \ln(\frac{r_e}{r_w}) - 2L_e] [\frac{1}{t} \ln(\frac{y_0}{y_t})] \quad (2)$$

where,

$y_0$  = y at time zero, and  
 $y_t$  = y at time t.

The effective well radius,  $r_e$ , and the term  $((1/t) \ln (y_0/y_t))$  were derived by using the computer program AQTESOLV™ (Geraghty & Miller, Inc., 1989). This computer program follows procedures and assumptions outlined by Bouwer (1989).

Slug test graphs are attached at the end of this appendix. Values of y were calculated for a particular time, t, and plotted on the graph. The computer program selects a "best-fit" line through the data points by linear regression along a "straight-line" portion of the graph. The slope of the "best-fit" line is used to calculate the hydraulic conductivity, K.

Three slug tests each were performed inside wells PEN-3221NE-MW6, PEN-3221NE-MW9, PEN-3221NE-MW10, and PEN-3221NE-MW12D. Hydraulic conductivity, K, is reported in feet per minute (ft/min) on the slug test graphs, and was recalculated to feet per day (ft/day). K was found to vary from  $2.6 \times 10^1$  ft/day to  $1.0 \times 10^2$  ft/day with an average K of  $5.1 \times 10^1$  ft/day.

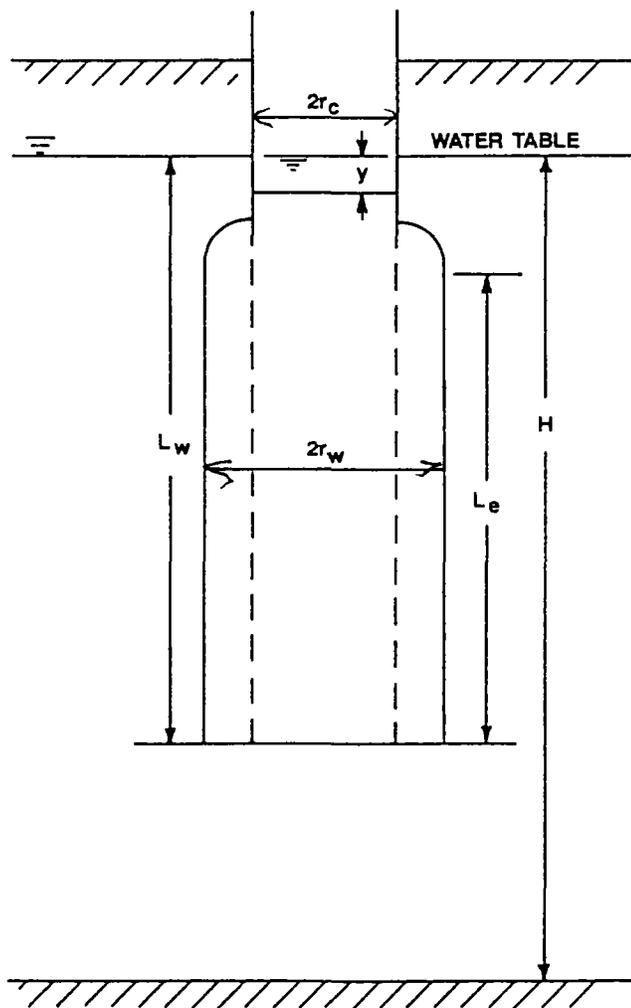
#### Average pore water velocity

Estimates of average pore water velocity were obtained using the following formula:

$$V = \frac{(K \cdot i)}{n} \quad (3)$$

where

V = seepage velocity in ft/day,  
 K = hydraulic conductivity in ft/day,  
 i = hydraulic gradient, and  
 n = estimated porosity.



- $r_c$  -radius of well.
- $r_w$  -radius of well + total thickness of the sand/gravel pack.
- $L_e$  -length of screened interval below the water table.
- $L_w$  -depth of well below water table.
- $H$  -depth to confining unit below the water table.
- $y$  -difference between static water level outside well and water level inside well.

**FIGURE D-1**  
**DEFINITIONS OF SLUG TEST**  
**PARAMETERS**(from Bouwer, 1989)



**CONTAMINATION**  
**ASSESSMENT REPORT**  
**SITE 3221NE**  
**NADEP PENSACOLA**  
**PENSACOLA, FLORIDA**

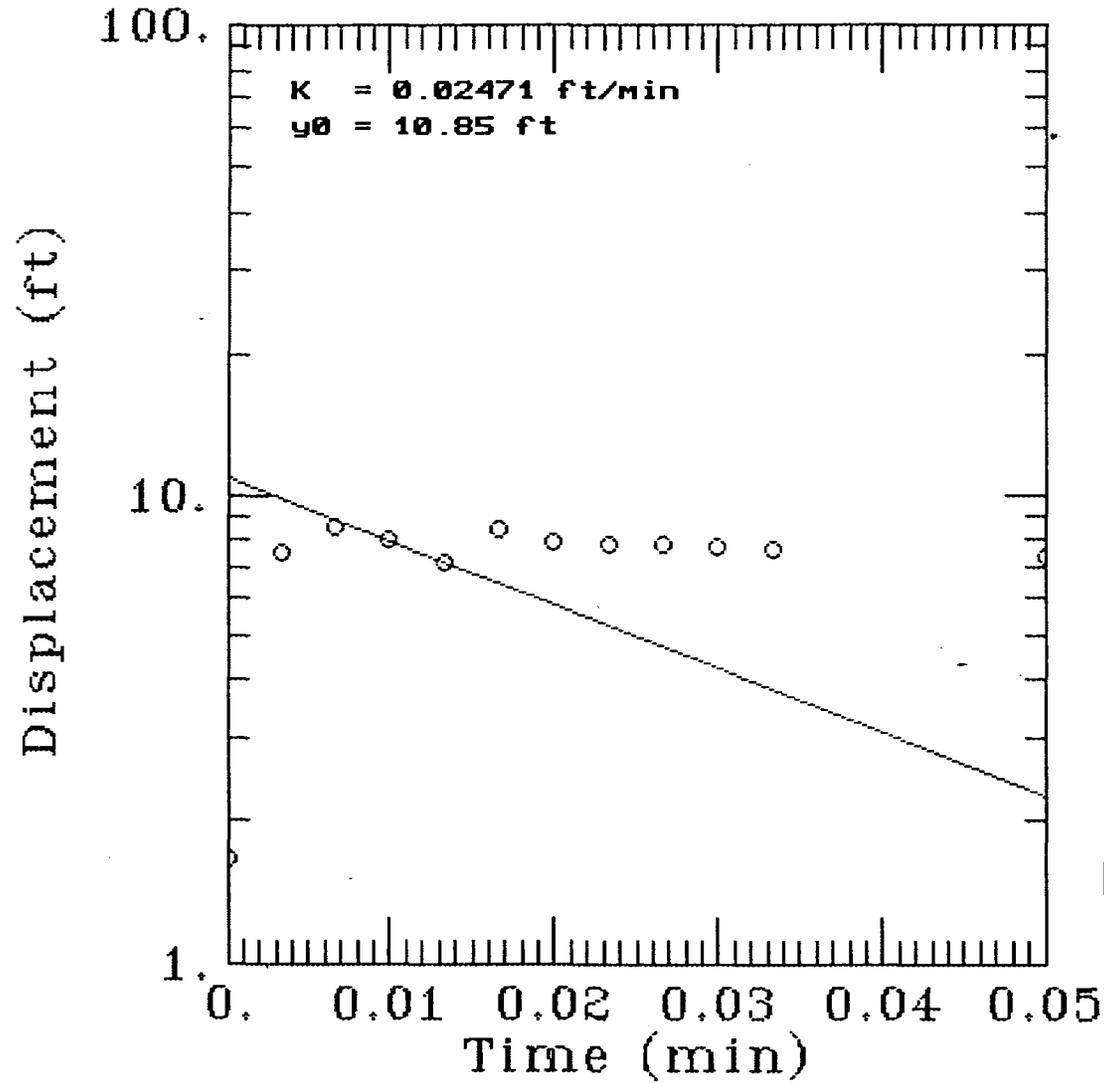
Assuming an estimated porosity of 25 percent, an average hydraulic gradient of  $2.5 \times 10^{-3}$ , and an average hydraulic conductivity of  $5.1 \times 10^1$  ft/day, the average pore water velocity is calculated as follows:

$$V = \frac{5.1 \times 10^{-1} \text{ ft/day} * 2.5 \times 10^{-3} \text{ ft/ft}}{0.25}$$

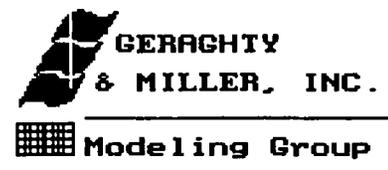
$$V = 5.1 \times 10^{-1} \text{ ft/day}$$

## **SLUG TEST PLOTS**

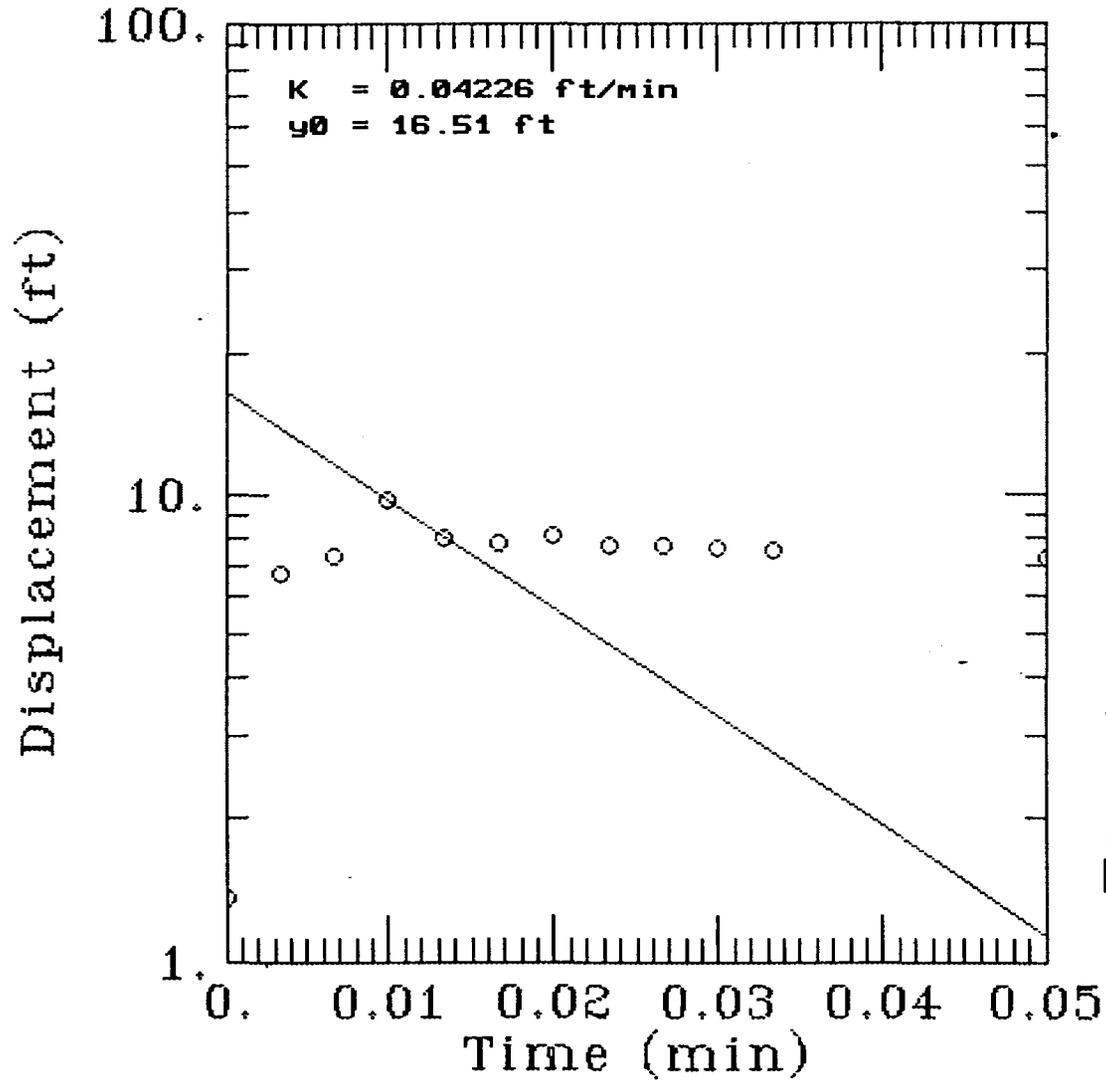
# 3221NE MW-6 RUN #1



AQTESOLV



# 3221NE MW-6 RUN #2



AQTESOLV

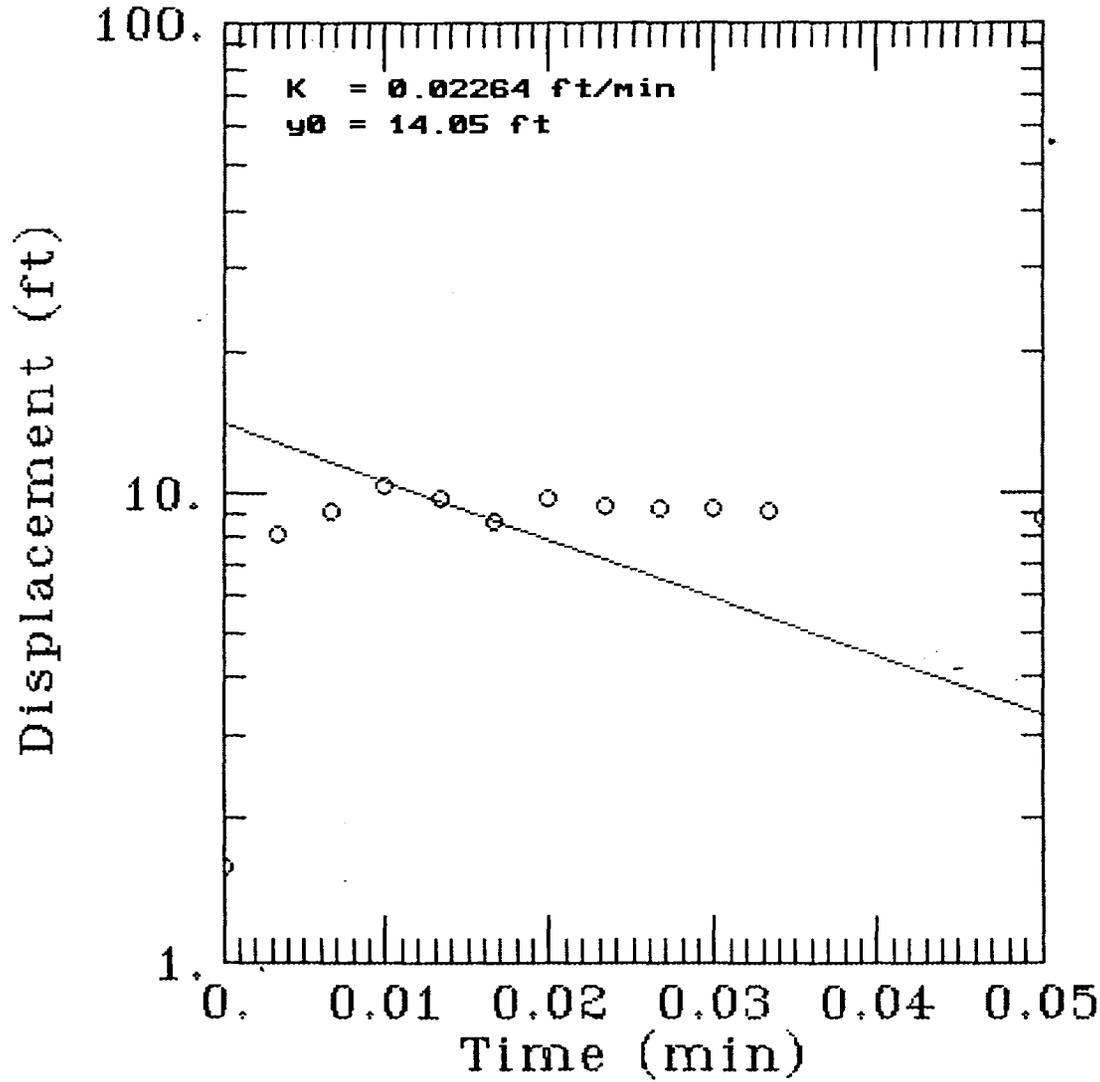


GERAGHTY  
& MILLER, INC.



Modeling Group

# 3221NE MW-6 RUN #3



AQTESOLV

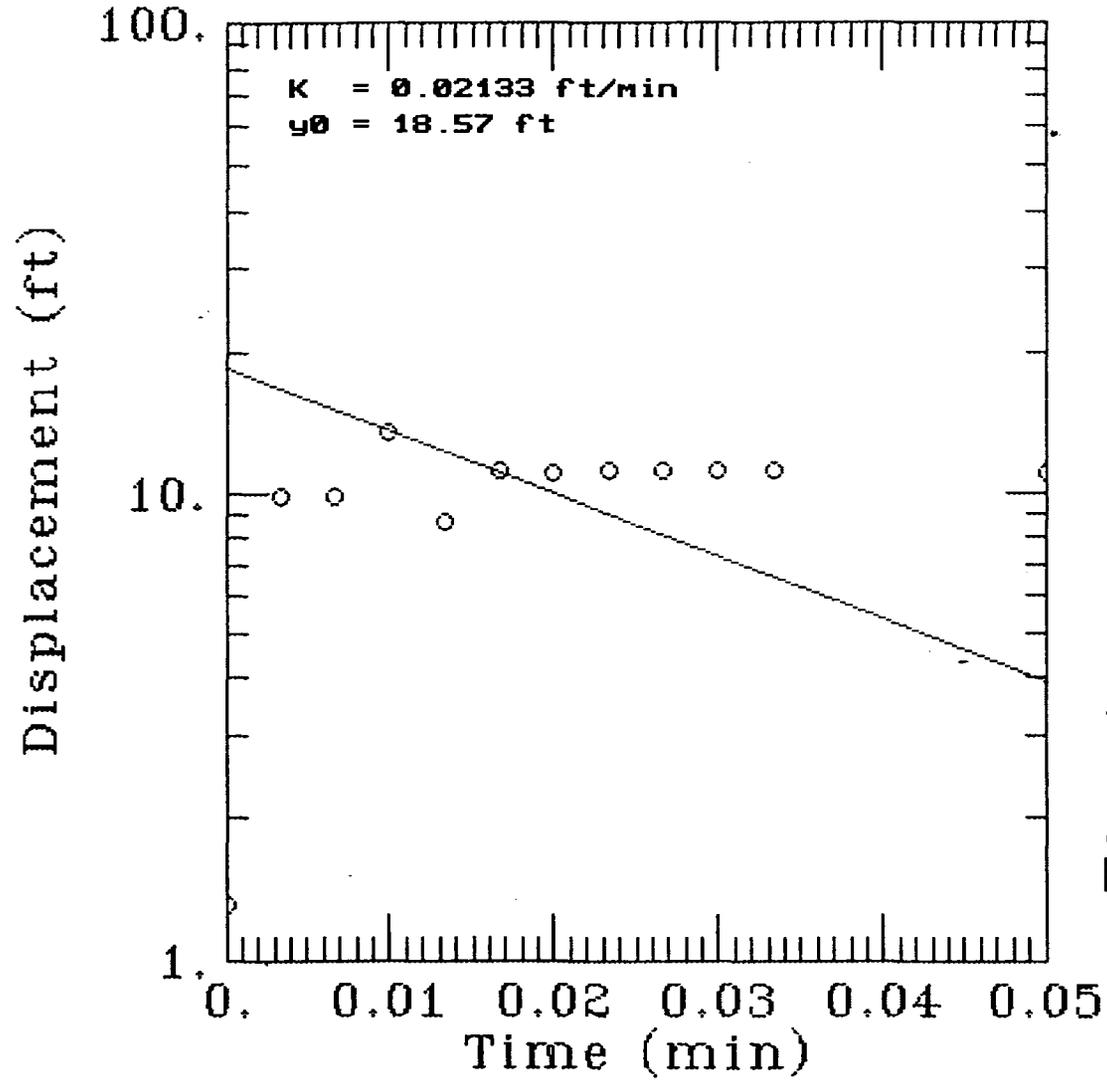


GERAGHTY  
& MILLER, INC.



Modeling Group

# 3221NE MW-9 RUN #1



AQTESOLV

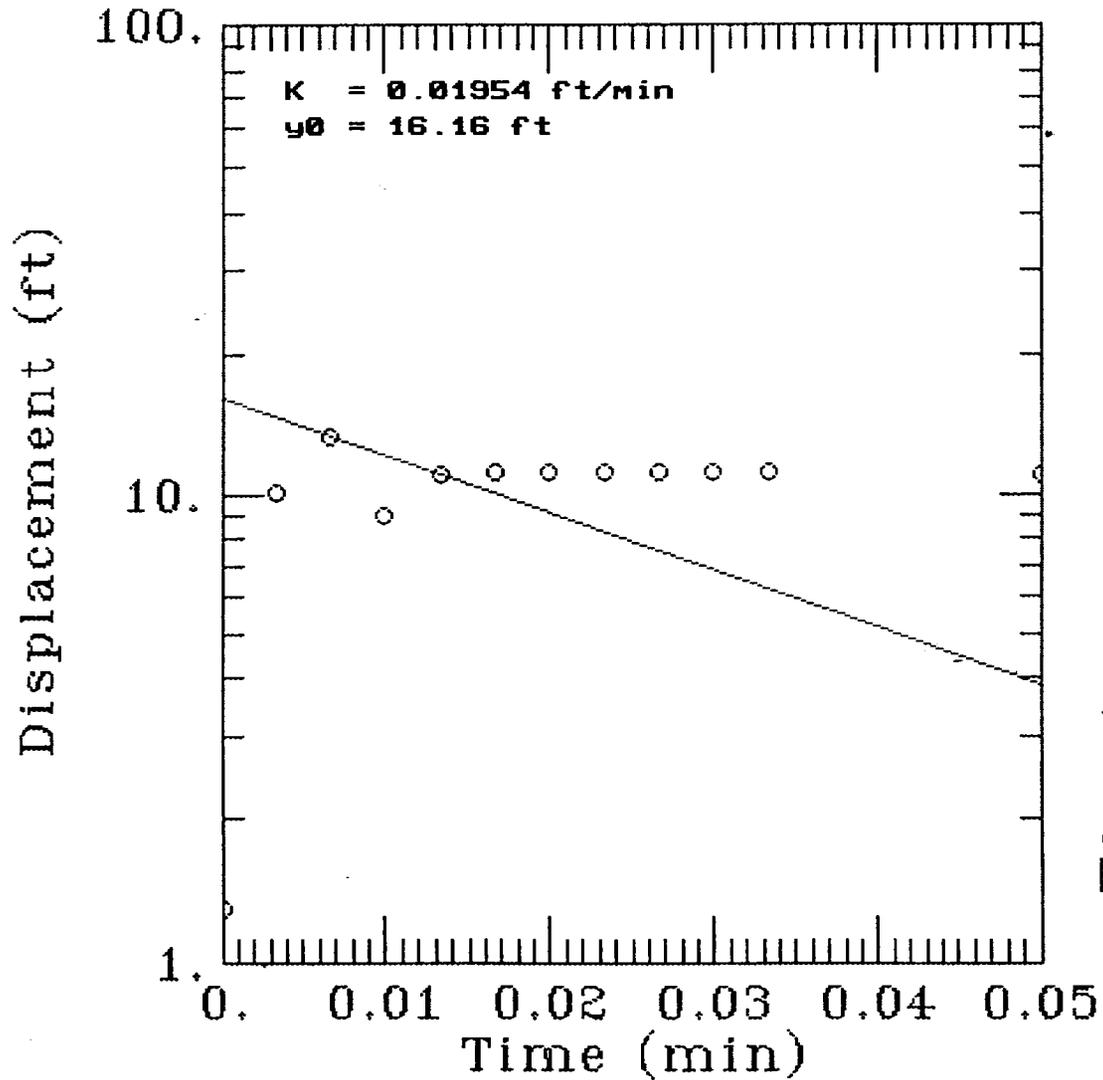


GERAGHTY  
& MILLER, INC.



Modeling Group

# 3221NE MW-9 RUN #2



AQTESOLV

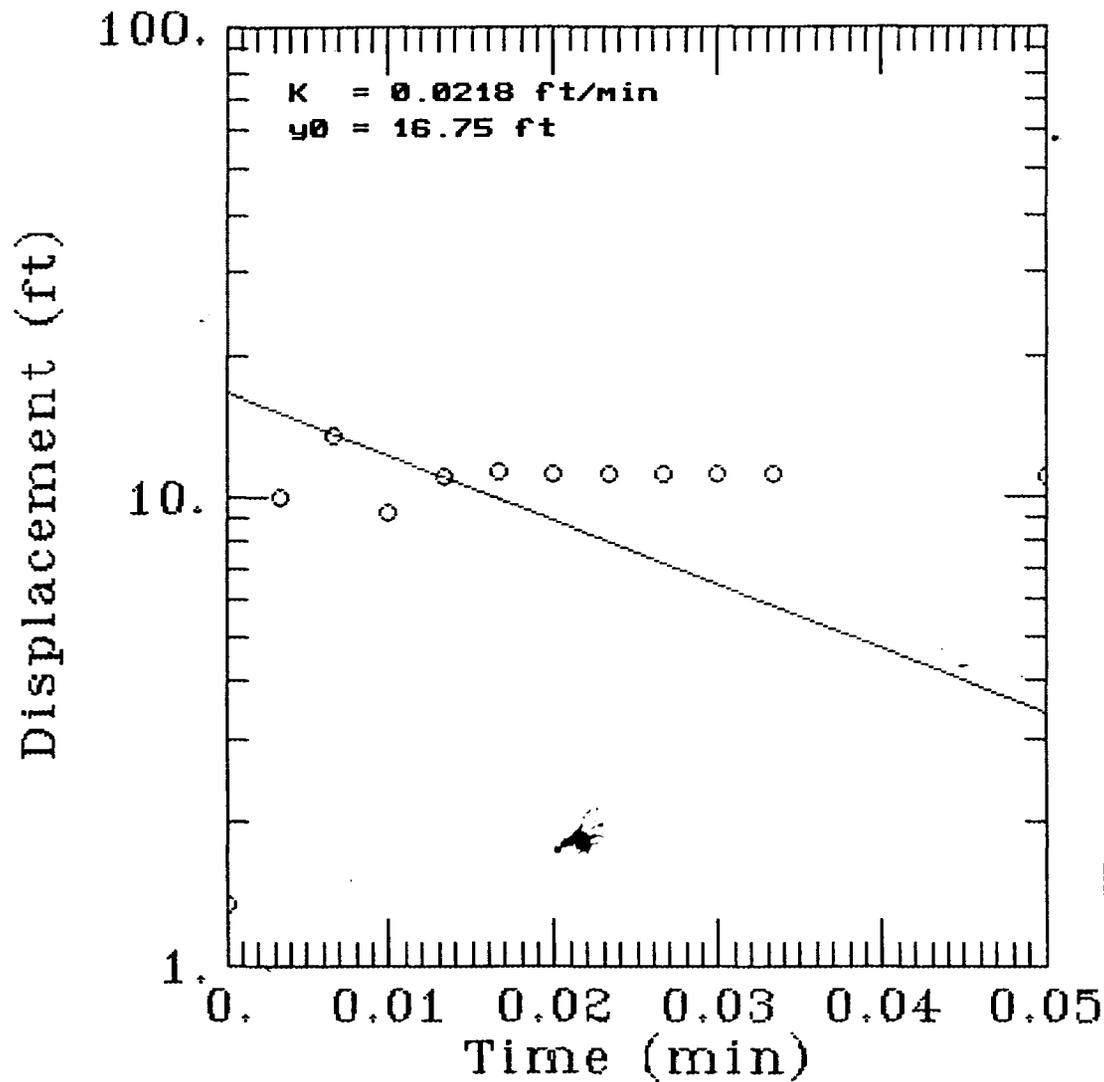


GERAGHTY  
& MILLER, INC.



Modeling Group

# 3221NE MW-9 RUN #3

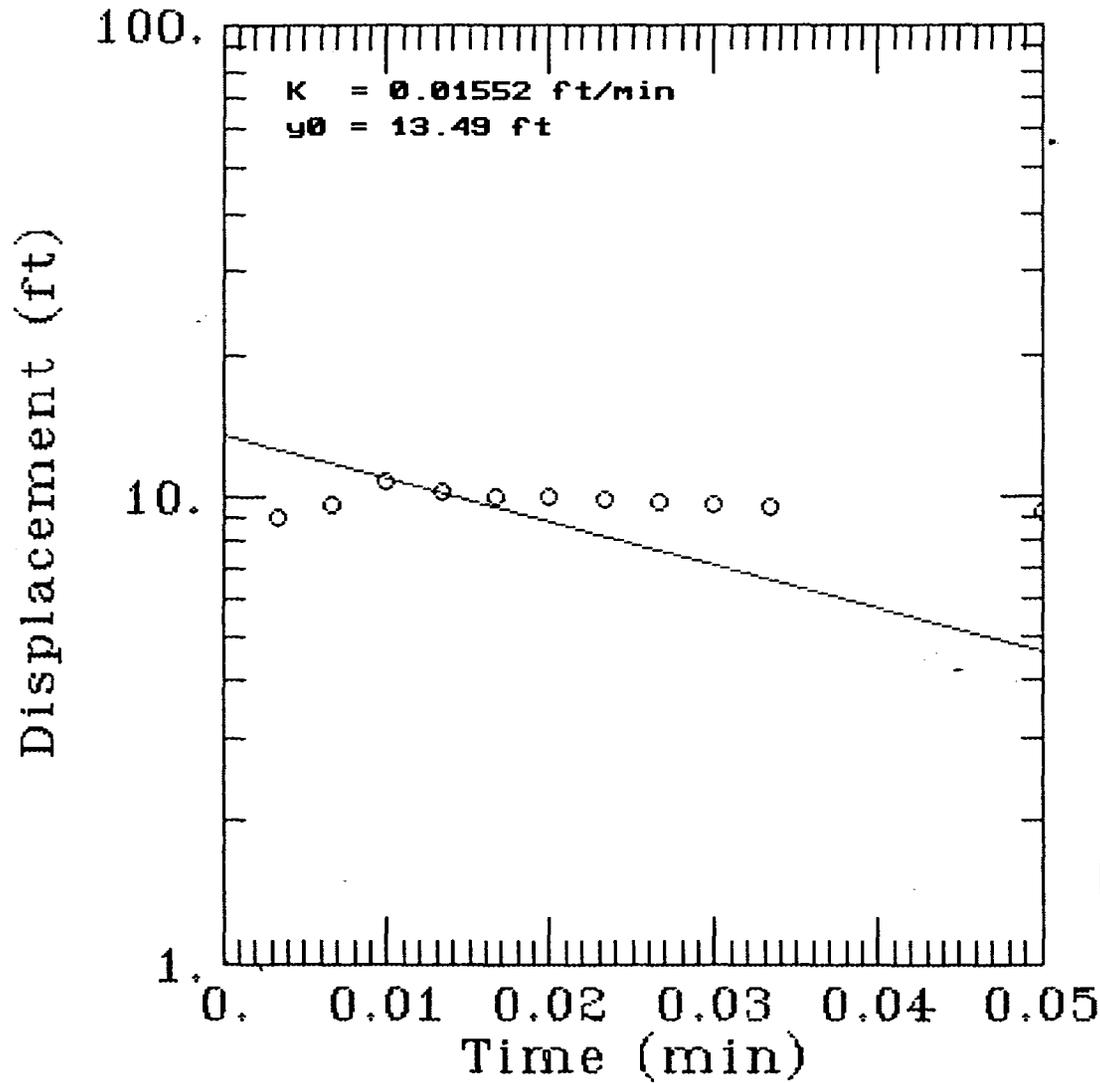


AQTESOLV



Modeling Group

# 3221NE MW-10 RUN #1



AQTESOLV

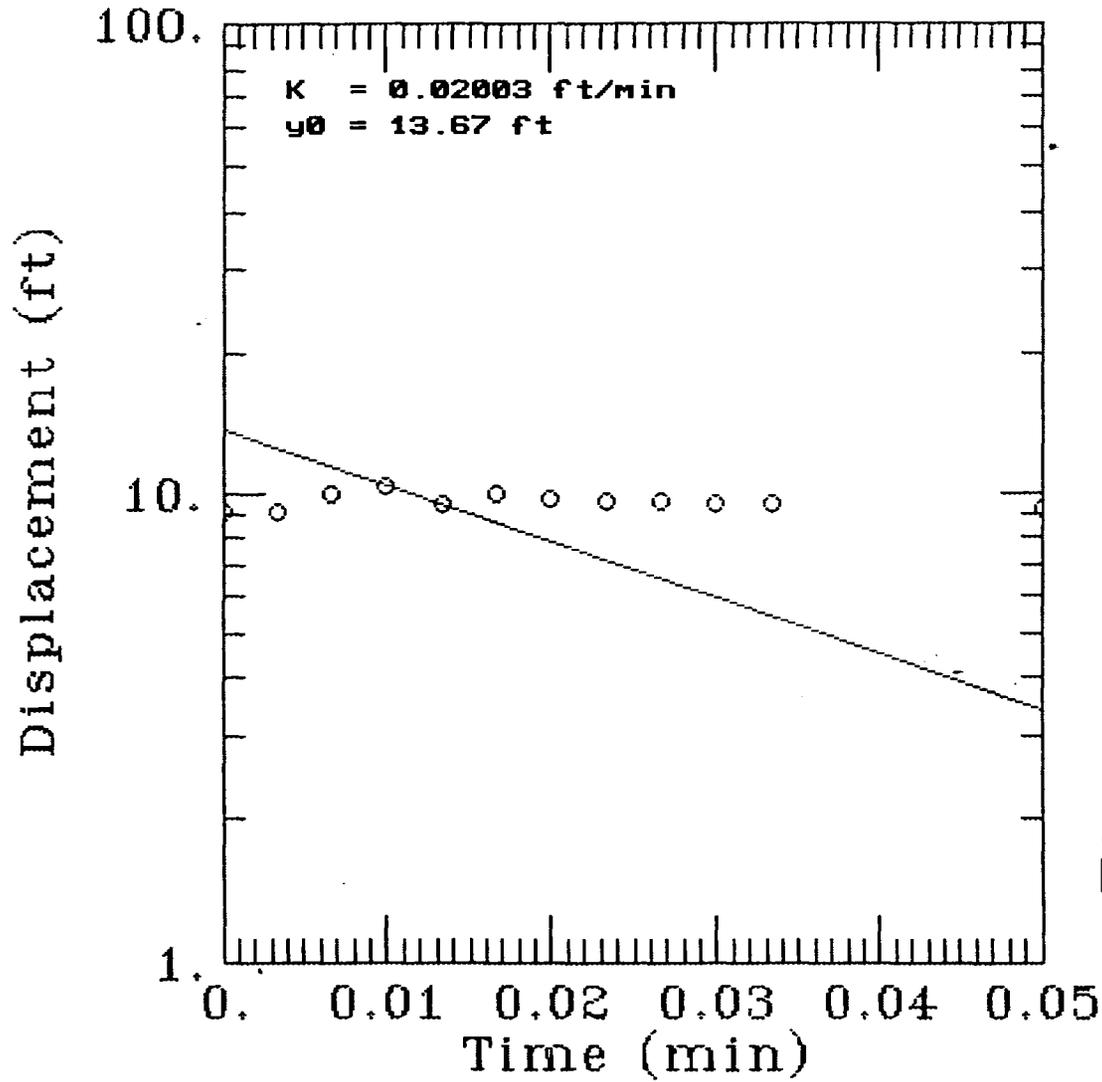


GERAGHTY  
& MILLER, INC.



Modeling Group

# 3221NE MW-10 RUN #2



AQTESOLV

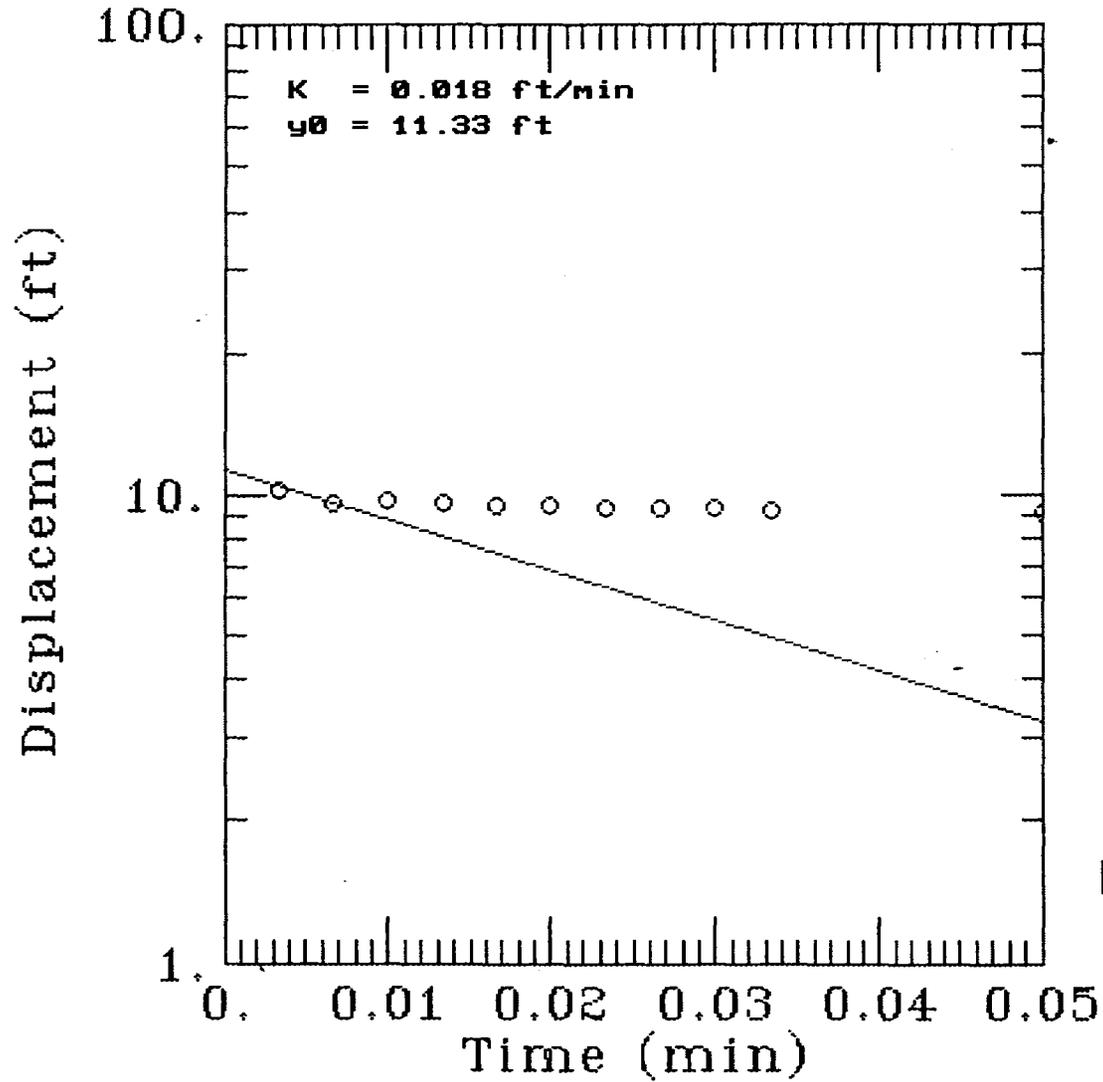


GERAGHTY  
& MILLER, INC.



Modeling Group

# 3221NE MW-10 RUN #3



AQTESOLV

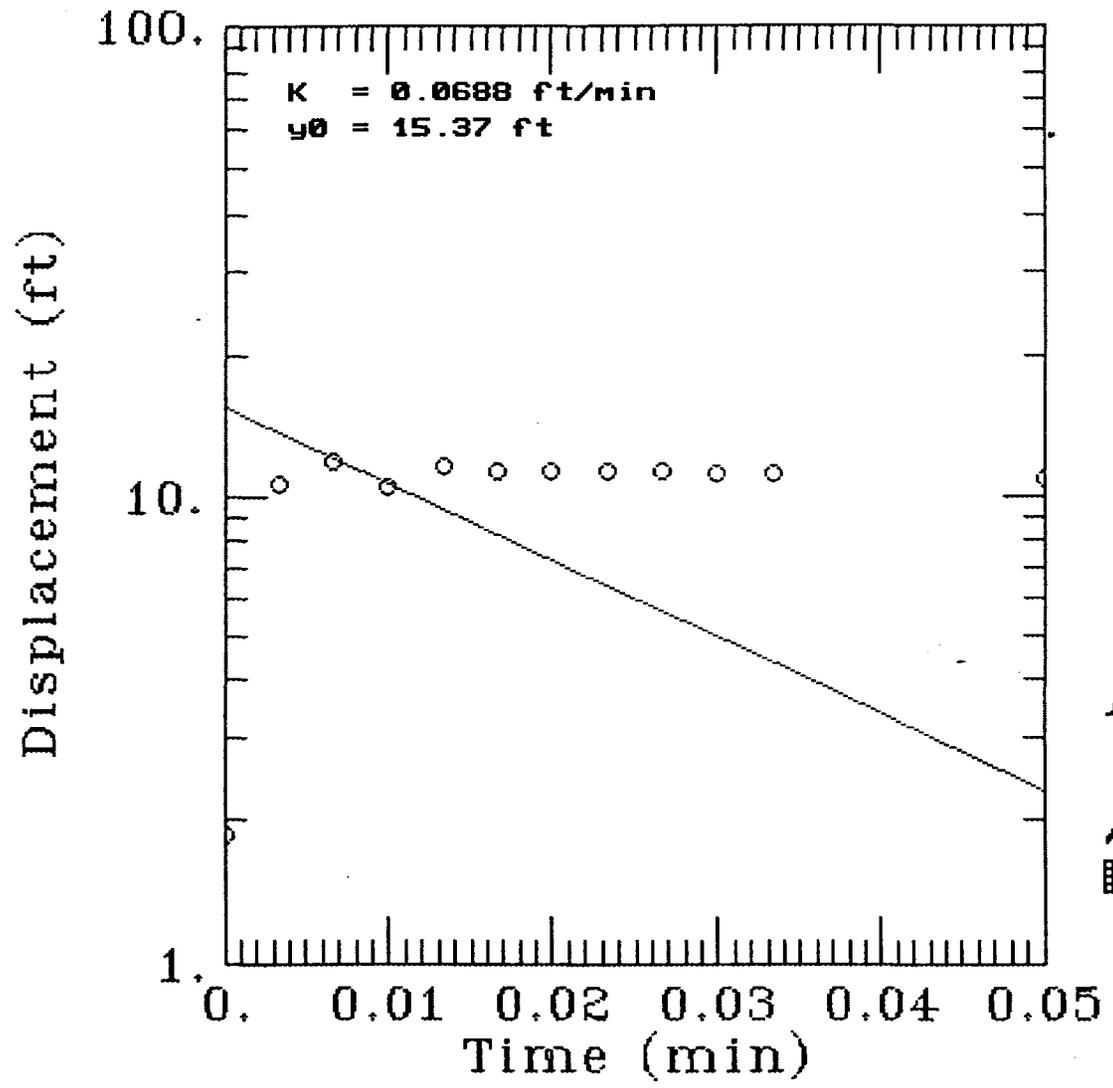


GERAGHTY  
& MILLER, INC.



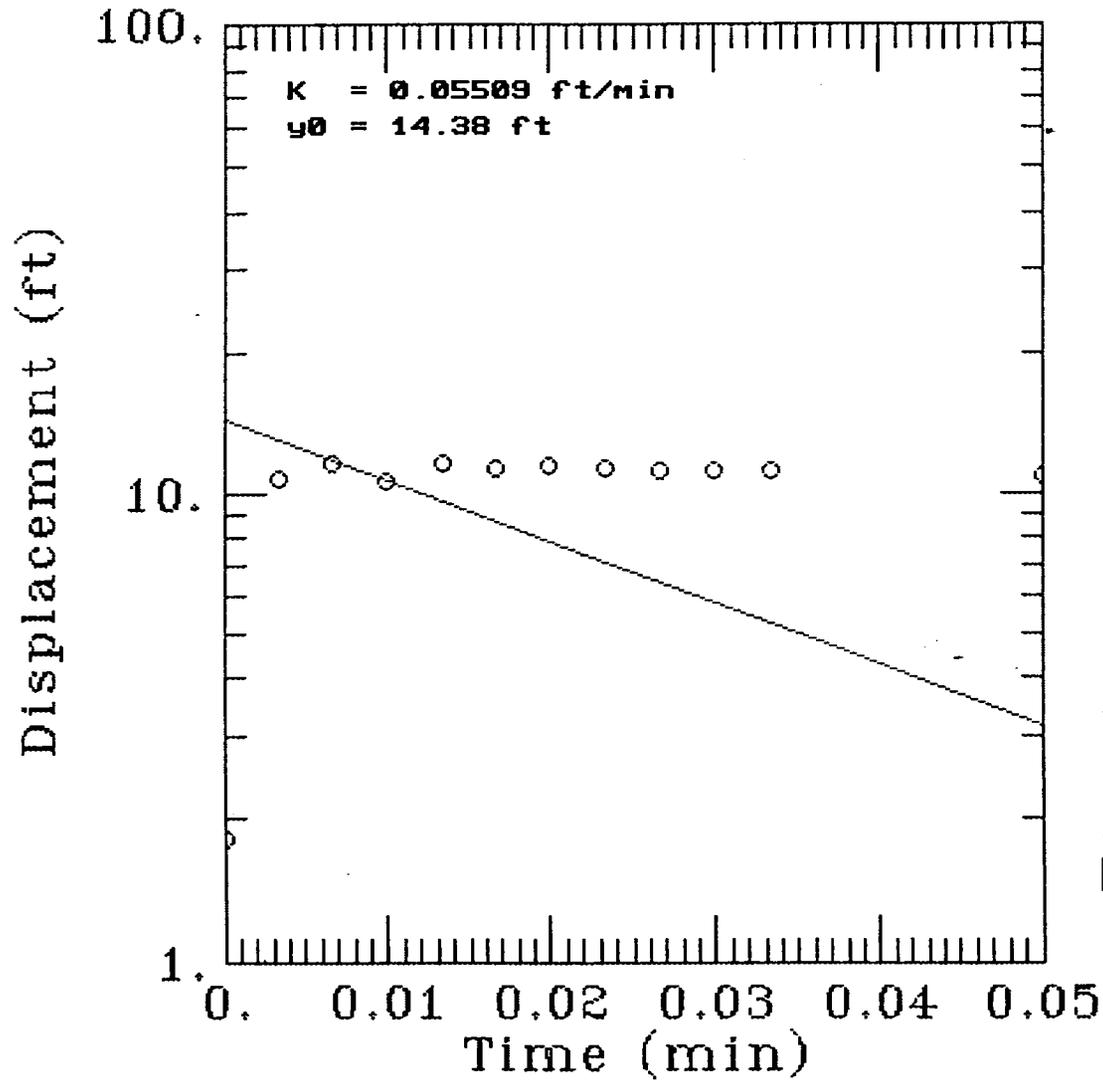
Modeling Group

# 3221NE MW-12D RUN #1



AQTESOLV  
GERAGHTY  
& MILLER, INC.  
Modeling Group

# 3221NE MW-12D RUN #2



AQTESOLV

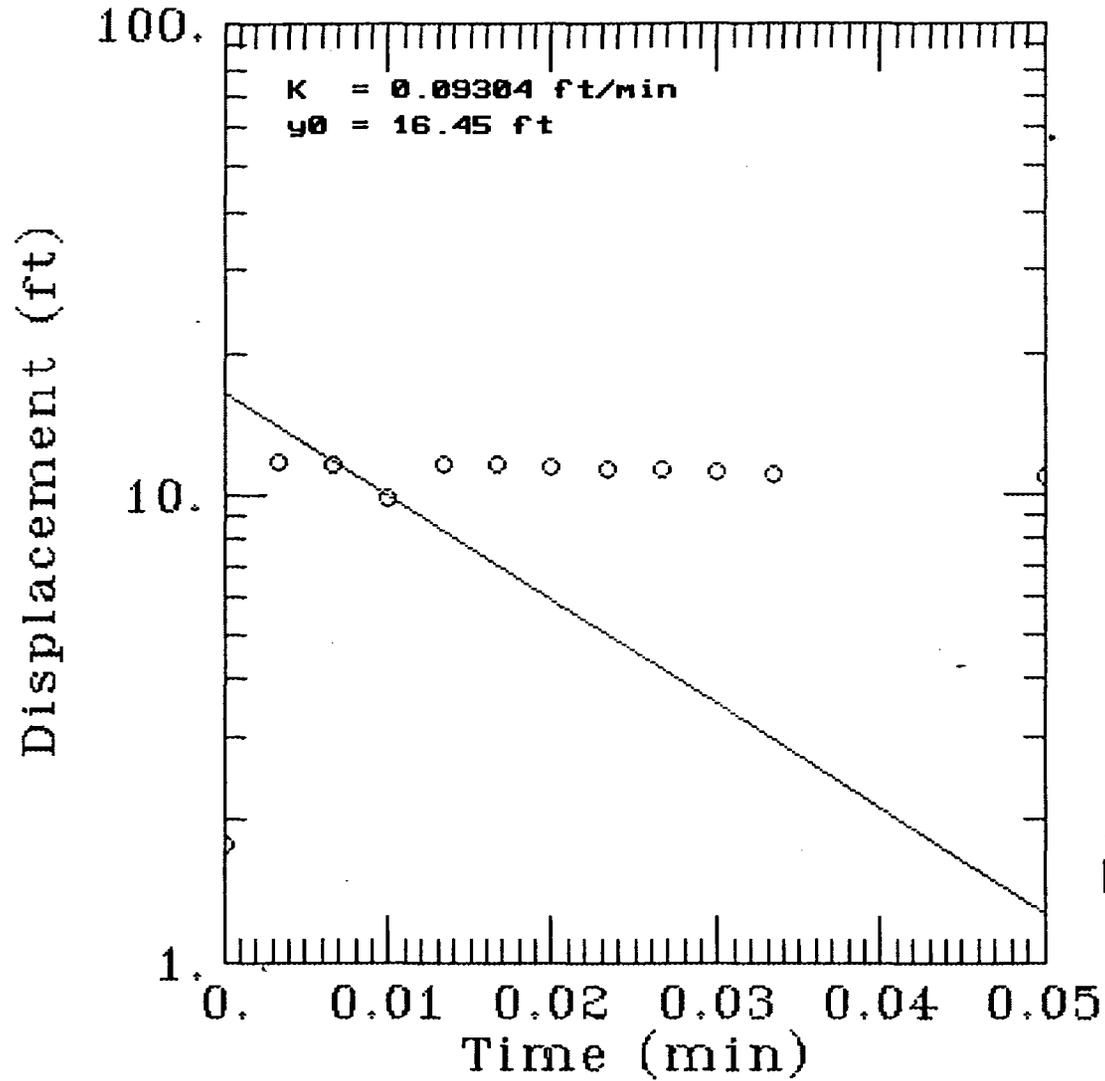


GERAGHTY  
& MILLER, INC.



Modeling Group

### 3221NE MW-12D RUN #3



AQTESOLV



GERAGHTY  
& MILLER, INC.



Modeling Group

**APPENDIX E**  
**LABORATORY ANALYTICAL DATA**

## **SOIL SAMPLE ANALYSES**



WADSWORTH/ALERT  
LABORATORIES 5910 Breckenridge Pkwy., Suite H, Tampa, FL 33610

Sampling, testing, mobile labs

Since 1938

---

ANALYTICAL REPORT

SUBCONTRACT NUMBER: 1-08-134

TASK ORDER NUMBER: 0014, MOD. NO. 0001

NAS/NADEP PENSACOLA - PHASE I

Presented to:

PETER REDFERN

ABB ENVIRONMENTAL SERVICES, INC.

WADSWORTH/ALERT LABORATORIES

5910 BRECKENRIDGE PARKWAY, SUITE H

TAMPA, FL 33610

(813) 621-0784

Dan Henson  
Project Manager

Randall C. Grubbs  
Laboratory Director - Florida

April 17, 1992



HEADQUARTERS AND  
LABORATORY  
P.O. Box 2912  
4101 Shuffel Drive, N.W.  
North Canton, OH 44720  
(216) 497-9396

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LABORATORY  
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Lexington, SC 29072  
(803) 957-8590

REGIONAL  
LABORATORY  
5910 Breckenridge Pkwy  
Suite H  
Tampa, FL 33610  
(813) 621-0784



WADSWORTH/ALERT  
LABORATORIES

### INVOLVEMENT

This report summarizes the analytical results of the NAS/NADEP Pensacola - Phase I site submitted by ABB Environmental Services, Inc. to Wadsworth/ALERT Laboratories who provided independent, analytical services for this project under the direction of Peter Redfern. The samples were accepted into Wadsworth's Florida facility on 02 April 1992, in accordance with documented sample acceptance procedures. The associated analytical methods and sample results are outlined sequentially in this report.

Analytical results included in this report have been reviewed for compliance with the Laboratory QA/QC Plan as summarized in the Quality Control Section at the rear of the report. Sample custody documentation describing the number of samples and sample matrices is also included. Any qualifications and/or non-compliant items have been noted below.



WADSWORTH/ALERT  
LABORATORIES

ANALYTICAL METHODS

Wadsworth/ALERT Laboratories utilizes only USEPA approved analytical methods and instrumentation. The analytical methods utilized for the analysis of these samples are listed below.

PARAMETER	METHOD
-----	
METALS	
Arsenic	** EPA Method 206.2    ** SW846 Method 7060
Cadmium	** EPA Method 200.7    ** SW846 Method 6010
Chromium	** EPA Method 200.7    ** SW846 Method 6010
Lead	** EPA Method 239.2    ** SW846 Method 6010
Digestion	** SW846 Method 3050

NOTE: \*\* Indicates usage of this method to obtain results for this report.

EPA Methods -Methods for Chemical Analysis of Water and Wastes, USEPA, 600/4-79-020, March, 1983. July, 1982  
Drinking Waters USEPA, 600/4-88/039, December, 1988.

Std. Methods -Standard Methods for the Examination of Water and Wastewater, APHA, 16th edition, 1985.

USEPA Methods -From 40CFR Part 136, published in Federal Register on October 26, 1984.

SW846 Methods -Test Methods for Evaluating Solid Waste Physical/Chemical Methods, 3rd Edition, USEPA, 1986.

ASTM Methods -American Society for Testing and Materials.

NIOSH Method -NIOSH Manual of Analytical Methods, National Institute for Occupational Safety and Health, 2nd Edition, April 1977.



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2D0206-1  
MATRIX : SOIL

DATE RECEIVED: 4/ 2/92

SAMPLE ID : MW-1 (5')

PROJ: NADEP PEN/3221 WE

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT  
SELECTED LIST

HRS84297

---

Total metals analysis results - dry weight basis

DRY WEIGHT (%): 89%

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic	4/14/92	ND	0.5 mg/kg
Cadmium	4/14/92	ND	0.5 mg/kg
Chromium	4/14/92	ND	2.5 mg/kg
Lead	4/14/92	16	2.5 mg/kg

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB # : 2D0206-2  
MATRIX : SOIL

DATE RECEIVED: 4/ 2/92

SAMPLE ID : MW-2 (5.5')

PROJ: NADEP PEN/3221 WE

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT  
SELECTED LIST

HRS84297

Total metals analysis results - dry weight basis

DRY WEIGHT (%): 92%

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic	4/14/92	ND	0.5 mg/kg
Cadmium	4/14/92	ND	0.5 mg/kg
Chromium	4/14/92	ND	2.5 mg/kg
Lead	4/14/92	ND	2.5 mg/kg

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2D0206-3  
MATRIX : SOIL

DATE RECEIVED: 4/ 2/92

SAMPLE ID : MW-3 (5.5')

PROJ: NADEP PEN/3221 WE

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT  
SELECTED LIST

HRS84297

Total metals analysis results - dry weight basis

DRY WEIGHT (%): 90%

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic	4/14/92	ND	0.5 mg/kg
Cadmium	4/14/92	ND	0.5 mg/kg
Chromium	4/14/92	ND	2.5 mg/kg
Lead	4/14/92	ND	2.5 mg/kg

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB # : 2D0206-4  
MATRIX : SOIL

DATE RECEIVED: 4/ 2/92

SAMPLE ID : MW-4 (5')

PROJ: NADEP PEN/3221 WE

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT  
SELECTED LIST

HRS84297

Total metals analysis results - dry weight basis

DRY WEIGHT (%): 32%

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic	4/14/92	ND	0.5 mg/kg
Cadmium	4/14/92	ND	0.5 mg/kg
Chromium	4/14/92	ND	2.5 mg/kg
Lead	4/14/92	ND	2.5 mg/kg

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB # : 2D0206-5  
MATRIX : SOIL

DATE RECEIVED: 4/ 2/92

SAMPLE ID : MW-5 (6')

PROJ: NADEP PEN/3221 WE

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT  
SELECTED LIST

HRS84297

Total metals analysis results - dry weight basis

DRY WEIGHT (%): 75%

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic	4/14/92	ND	0.5 mg/kg
Cadmium	4/14/92	ND	0.5 mg/kg
Chromium	4/14/92	ND	2.5 mg/kg
Lead	4/14/92	ND	2.5 mg/kg

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2D0206-6  
MATRIX : SOIL

DATE RECEIVED: 4/ 2/92

SAMPLE ID : MW-6 (6')

PROJ: NADEP PEN/3221 WE

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT  
SELECTED LIST

HRS84297

---

Total metals analysis results - dry weight basis

DRY WEIGHT (%): 77%

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic	4/14/92	ND	0.5 mg/kg
Cadmium	4/14/92	ND	0.5 mg/kg
Chromium	4/14/92	ND	2.5 mg/kg
Lead	4/14/92	ND	2.5 mg/kg

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2D0206-7  
MATRIX : SOIL

DATE RECEIVED: 4/ 2/92

SAMPLE ID : MW-7 (4')

PROJ: NADEP PEN/3221 WE

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT  
SELECTED LIST

HRS84297

Total metals analysis results - dry weight basis

DRY WEIGHT (%): 87%

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic	4/14/92	ND	0.5 mg/kg
Cadmium	4/14/92	ND	0.5 mg/kg
Chromium	4/14/92	ND	2.5 mg/kg
Lead	4/14/92	3.9	2.5 mg/kg

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB # : 2D0206-8  
MATRIX : SOIL

DATE RECEIVED: 4/ 2/92

SAMPLE ID : MW-8 (5')

PROJ: NADEP PEN/3221 WE

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT  
SELECTED LIST

HRS84297

Total metals analysis results - dry weight basis

DRY WEIGHT (%): 85%

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	4/14/92	ND	0.5	mg/kg
Cadmium	4/14/92	ND	0.5	mg/kg
Chromium	4/14/92	ND	2.5	mg/kg
Lead	4/14/92	ND	2.5	mg/kg

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2D0206-9  
MATRIX : SOIL

DATE RECEIVED: 4/ 2/92

SAMPLE ID : MW-10 (6')

PROJ: NADEP PEN/3221 WE

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT  
SELECTED LIST

HRS84297

---

Total metals analysis results - dry weight basis

DRY WEIGHT (%): 87%

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic	4/14/92	ND	0.5 mg/kg
Cadmium	4/14/92	ND	0.5 mg/kg
Chromium	4/14/92	ND	2.5 mg/kg
Lead	4/14/92	ND	2.5 mg/kg

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2D0206-10  
MATRIX : SOIL

DATE RECEIVED: 4/ 2/92

SAMPLE ID : MW-12D (7')

PROJ: NADEP PEN/3221 WE

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT  
SELECTED LIST

HRS84297

---

Total metals analysis results - dry weight basis

DRY WEIGHT (%): 82%

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic	4/14/92	ND	0.5 mg/kg
Cadmium	4/14/92	ND	0.5 mg/kg
Chromium	4/14/92	ND	2.5 mg/kg
Lead	4/14/92	ND	2.5 mg/kg

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2D0206-11  
MATRIX : SOIL

DATE RECEIVED: 4/ 2/92

SAMPLE ID : DUPLICATE (5') PROJ: NADEP PEN/3221 WE

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT  
SELECTED LIST

HRS84297

Total metals analysis results - dry weight basis

DRY WEIGHT (%): 74%

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic	4/14/92	ND	0.5 mg/kg
Cadmium	4/14/92	ND	0.5 mg/kg
Chromium	4/14/92	4.6	2.5 mg/kg
Lead	4/14/92	25	2.5 mg/kg

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2D0206-12  
MATRIX : WATER

DATE RECEIVED: 4/ 2/92

SAMPLE ID : EQUIPMENT BLANK PROJ: NADEP PEN/3221 WE

CERTIFICATION #: E84059  
HRS84297

METALS ANALYTICAL REPORT  
SELECTED LIST

---

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	4/13/92	ND	10	ug/L
Cadmium	4/13/92	ND	10	ug/L
Chromium	4/13/92	ND	50	ug/L
Lead	4/13/92	ND	5	ug/L

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

## QUALITY CONTROL SECTION

- Quality Control Summary
- Laboratory Blanks
- Laboratory Control Sample
- Matrix Spike/Matrix Spike Duplicate Results
- Sample Custody Documentation



Wadsworth/ALERT Laboratories considers continuous analytical method performance evaluations to be an integral portion of the data package, and routinely includes the pertinent QA/QC data associated with various analytical result reports. Brief discussions of the various QA/QC procedures utilized to measure acceptable method and matrix performance follow.

#### Surrogate Spike Recovery Evaluations

Known concentrations of designated surrogate spikes, consisting of a number of similar, non-method compounds or method compound analogues, are added, as appropriate, to routine GC and GC/MS sample fractions prior to extraction and analysis. The percent recovery determinations calculated from the subsequent analysis is an indication of the overall method efficiency for the individual sample. This surrogate spike recovery data is displayed alongside acceptable analytical method performance limits at the bottom of each applicable analytical result report sheet.

NOTE: Acceptable method performance for Base/Neutral Acid extractables is indicated by two (2) of three (3) surrogates for each fraction with a minimum recovery of ten (10) percent each. For Pesticides one (1) of two (2) surrogates meeting performance criteria is acceptable.

#### Laboratory Analytical Method Blank Evaluations

Laboratory analytical method blanks are systematically prepared and analyzed in order to continuously evaluate the system interferences and background contamination levels associated with each analytical method. These method blanks include all aspects of actual laboratory method analysis (chemical reagents, glassware, etc.), substituting laboratory reagent water or solid for actual sample. The method blank must not contain any analytes above the reported detection limit. The following common laboratory contaminants are exceptions to this rule provided they are not present at greater than five times the detection limit.

##### Volatiles

Methylene chloride  
Toluene  
2-Butanone  
Acetone

##### Semi-volatiles

Dimethyl phthalate  
Diethyl phthalate  
Di-n-butyl phthalate  
Butyl benzyl phthalate  
Bis (2-ethylhexyl) phthalate

##### Metals

Calcium  
Magnesium  
Sodium

A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method blanks.

#### Laboratory Analytical Method Check Sample Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to a laboratory reagent blank prior to extraction and analysis. Percent recovery determinations demonstrate the performance of the analytical method. Failure of a check sample to meet established laboratory recovery criteria is cause to stop the analysis until the problem is resolved.



WADSWORTH/ALERT  
LABORATORIES

QUALITY ASSURANCE / QUALITY CONTROL  
PROGRAM SUMMARY  
(cont'd)

At that time all associated samples must be re-analyzed. A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method check samples.

Matrix Spike (MS)/Matrix Spike Duplicate (MSD) Recovery Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to two of three separate aliquots of a sequentially predetermined sample prior to extraction and analysis. Percent recovery determinations are calculated from both of the spiked samples by comparison to the actual values generated from the unspiked sample. These percent recovery determinations indicate the accuracy of the analysis at recovering actual analytical method compounds from the matrix. Relative percent difference determinations calculated from a comparison of the MS/MSD recoveries demonstrate the precision of the analytical method. Actual percent recovery and relative percent difference data is displayed alongside their respective acceptable analytical method performance limits in the QA/QC section of the report. The MS/MSD are considered in control when the precision is within established control limits and the associated check sample has been found to be acceptable. A minimum of ten percent (10%) of all analyses are MS/MSD quality control samples.

\*\*\*\*\*EXAMPLE\*\*\*\*\*

COMPOUND	SAMPLE CONC.	MS %REC	MSD %REC	RPD	QC LIMITS	
					RPD	RECOVERY
4,4'-DDT	0	95	112	16	22	66-119
Benzene	10	86	93	8	20	39-150
(compd. name)	sample result	1st% recov.	2nd% recov.	Rel.% diff.	accep. method perform range	

Analytical Result Qualifiers

The following qualifiers, as defined below, may be appended to analytical results in order to allow proper interpretation of the results presented:

J - indicates an estimated concentration (typically used when a dilution, matrix interference or instrumental limitation prevents accurate quantitation of a particular analyte).

B - indicates the presence of a particular analyte in the laboratory blank analyzed concurrently with the samples. Results must be interpreted accordingly.

DIL - indicates that because of matrix interferences and/or high analyte concentrations, it was necessary to dilute the sample to a point where the surrogate or spike concentrations fell below a quantifiable amount and could not be reported.



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2D0206-BK  
MATRIX : WATER

DATE RECEIVED: 4/ 2/92

SAMPLE ID : LABORATORY BLANK

CERTIFICATION #: E84059  
HRS84297

METALS ANALYTICAL REPORT  
SELECTED LIST

---

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	4/13/92	ND	10	ug/L
Cadmium	4/13/92	ND	10	ug/L
Chromium	4/13/92	ND	50	ug/L
Lead	4/13/92	ND	5	ug/L

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2D0206-BK  
MATRIX : SOIL

DATE RECEIVED: 4/ 2/92

SAMPLE ID : LABORATORY BLANK

METALS ANALYTICAL REPORT  
SELECTED LIST

CERTIFICATION #: E84059  
HRS84297

Total metals analysis results - as received

DRY WEIGHT (%): D

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	4/14/92	ND	0.01	mg/L
Cadmium	4/14/92	ND	0.01	mg/L
Chromium	4/14/92	ND	0.05	mg/L
Lead	4/14/92	ND	0.05	mg/L

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

LAB #: 2D0206-LCS  
MATRIX: WATER

DATE RECEIVED: 04/02/92  
DATE PREP'D: 04/13/92  
DATE ANALYZED: 04/13/92

LABORATORY CHECK SAMPLE RECOVERY

COMPOUND	LCS %REC	QC LIMITS RECOVERY
Arsenic, furnace	86	54-130
Cadmium	100	78-113
Chromium	109	79-121
Lead, furnace	91	64-131



WADSWORTH/ALERT  
LABORATORIES

LAB #: 2D0206-LCS  
MATRIX: SOIL

DATE RECEIVED: 04/02/92  
DATE PREP'D: 04/14/92  
DATE ANALYZED: 04/14/92

LABORATORY CHECK SAMPLE RECOVERY

COMPOUND	LCS %REC	QC LIMITS RECOVERY
Arsenic, furnace	94	51-124
Cadmium	86	67-113
Chromium	104	73-117
Lead	96	58-130

WADSWORTH/ALERT LABORATORIES  
 SAMPLE SHIPPER EVALUATION AND RECEIPT FORM

Client: ABB Project Name/Number: Nadep Pen / 3221 WE  
 Samples Received By: [Signature] / WAD Date Received: 4-2-92  
 (Signature)  
 Sample Evaluation Form By: [Signature] / WAD LAB No: 4197/200206-1 to 16  
 (Signature)

Type of shipping container samples received in? WAL Cooler   
 Client Cooler  WAL Shipper  Box  Other

Any "NO" responses or discrepancies should be explained in comments section.

	YES	NO
1. Were custody seals on shipping container(s) intact? . . . . .	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Were custody papers properly included with samples? . . . . .	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Were custody papers properly filled out (ink, signed, match labels)? . . . . .	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Did all bottles arrive in good condition (unbroken)? . . . . .	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Were all bottle labels complete (Sample No., date, signed, analysis preservatives)? . . . . .	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Were correct bottles used for the tests indicated? . . . . .	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Were proper sample preservation techniques indicated? . . . . .	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8. Were samples received within adequate holding time? . . . . .	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. Were all VOA bottles checked for the presence of air bubbles? (If air bubbles were found indicate in comment section)	<input checked="" type="checkbox"/> NA	<input type="checkbox"/>
10. Were samples in direct contact with wet ice? (NOTE TEMPERATURE BELOW)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11. Were samples accepted into the laboratory? (If no see comments)	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Cooler # 1 Temp 2 °C      Cooler # \_\_\_\_\_ Temp \_\_\_\_\_ °C  
 Cooler # \_\_\_\_\_ Temp \_\_\_\_\_ °C      Cooler # \_\_\_\_\_ Temp \_\_\_\_\_ °C

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

44471 ZDOZDC-11-11

# CHAIN OF CUSTODY RECORD

PROJECT NO.		PROJECT NAME				NO. OF CONTAINERS	SAMPLE TYPE										REMARKS  INDICATE SOIL/WATER/AIR SEDIMENT/SLUDGE			
SAMPLERS (SIGNATURE)		DATE	TIME	COMP	GRAB		STATION LOCATION	ASFD												
Ryszard [Signature]		3/2/92	1555		X	mw1	1													SOIL
		3/2/92	1555		X	Duplicate	1													"
		3/2/92	1610		X	mw8	1													"
		3/2/92	1640		X	mw4	1													"
		3/2/92	1650		X	mw5	1													"
		3/2/92	1700		X	mw3	1													"
		3/2/92	1720			EQUIP BLANK	1													WATER
		3/2/92	1730		X	mw6	1													SOIL
		3/2/92	1730		X	mw7	1													"
		3/2/92	1746		X	mw10	1													"
		3/2/92	1745		X	mw2	1													"
		3/2/92	1755		X	mw 12 D														"

RELINQUISHED BY: (SIGNATURE) [Signature]	DATE/TIME 3/2/92	RECEIVED BY: (SIGNATURE) [Signature]	RELINQUISHED BY: (SIGNATURE) [Signature]	DATE/TIME 4/2/92	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED FOR DISPOSAL BY: (SIGNATURE)	DATE/TIME	REMARKS	

**GROUNDWATER SAMPLE ANALYSES**



WADSWORTH/ALERT  
LABORATORIES 5910 Breckenridge Pkwy., Suite H, Tampa, FL 33610

Sampling, testing, mobile labs

Since 1938

---

ANALYTICAL REPORT

SUBCONTRACT NUMBER: 1-08-134

TASK ORDER NUMBER: 0015

NAS/NADEP PENSACOLA - PHASE II

Presented to:

PETER REDFERN

ABB ENVIRONMENTAL SERVICES, INC.

WADSWORTH/ALERT LABORATORIES

5910 BRECKENRIDGE PARKWAY, SUITE H

TAMPA, FL 33610

(813) 621-0784

Dan Henson  
Project Manager

Randall C. Grubbs  
Laboratory Director - Florida

March 24, 1992



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REGIONAL  
LABORATORY  
5910 Breckenridge Pkwy  
Suite H  
Tampa, FL 33610  
(813) 621-0784



WADSWORTH/ALERT  
LABORATORIES

### INVOLVEMENT

This report summarizes the analytical results of the NAS/NADEP Pensacola - Phase II site submitted by ABB Environmental Services, Inc. to Wadsworth/ALERT Laboratories who provided independent, analytical services for this project under the direction of Peter Redfern. The samples were accepted into Wadsworth's Florida facility on 28 February 1992, in accordance with documented sample acceptance procedures. The associated analytical methods and sample results are outlined sequentially in this report.

Analytical results included in this report have been reviewed for compliance with the Laboratory QA/QC Plan as summarized in the Quality Control Section at the rear of the report. Sample custody documentation describing the number of samples and sample matrices is also included. Any qualifications and/or non-compliant items have been noted below.

Laboratory ID #

2B2805-6,9,11,15,16

Narrative

These samples were analyzed for volatile organic compounds after the EPA recommended holding time had expired.



WADSWORTH/ALERT  
LABORATORIES

ANALYTICAL METHODS

Wadsworth/ALERT Laboratories utilizes only USEPA approved analytical methods and instrumentation. The analytical methods utilized for the analysis of these samples are listed below.

PARAMETER

METHOD

-----

ORGANICS

Volatile Organics

\*\* EPA Method 624

Base/Neutral Acid Extractables

\*\* EPA Method 625

METALS

Arsenic

\*\* EPA Method 206.2

Cadmium

\*\* EPA Method 200.7

Chromium

\*\* EPA Method 200.7

Lead

\*\* EPA Method 239.2

MISCELLANEOUS

Tot. Rec. Petroleum Hydrocarbons

\*\* EPA Method 418.1

NOTE: \*\* Indicates usage of this method to obtain results for this report.

EPA Methods -Methods for Chemical Analysis of Water and Wastes, USEPA, 600/4-79-020, March, 1983. July, 1982

Drinking Waters USEPA, 600/4-88/039, December, 1988.

Std. Methods -Standard Methods for the Examination of Water and Wastewater, APHA, 16th edition, 1985.

USEPA Methods -From 40CFR Part 136, published in Federal Register on October 26, 1984.

SW846 Methods -Test Methods for Evaluating Solid Waste Physical/Chemical Methods, 3rd Edition, USEPA, 1986.

ASTM Methods -American Society for Testing and Materials.

NIOSH Method -NIOSH Manual of Analytical Methods, National Institute for Occupational Safety and Health, 2nd Edition, April 1977.



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-1  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-1

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\*\* (None Detected, lower detectable limit = ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	96	(75-123)	(85-126)	(85-138)
Toluene-d8	102	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	93	(86-115)	(84-124)	(83-128)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-1  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-1

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
OTHER COMPOUNDS

---

Acetone

79 ug/L

---

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS  
with their estimated concentrations

---



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-1  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/10/92

SAMPLE ID: MW-1

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS (1 of 2)

HRS84297

---

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-1  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/10/92

SAMPLE ID: MW-1

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

BASE/NEUTRAL EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS (2 of 2)

---

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit: estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	37	(22-135)	(10-155)
Fluorobiphenyl	30	(34-140)	(12-153)
Terphenyl-d14	16	(10-132)	(13-140)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-1  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/10/92

SAMPLE ID: MW-1

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

ACID EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
2-Fluorophenol	22	(17-95)	(24-118)
Phenol-d5	15	(11-89)	(17-124)
2,4,6-Tribromophenol	10	(10-134)	(10-156)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-1  
MATRIX : WATER

DATE RECEIVED: 2/28/92

SAMPLE ID : MW-1

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

METALS ANALYTICAL REPORT  
SELECTED LIST

---

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	3/11/92	ND	10	ug/L
Cadmium	3/11/92	ND	10	ug/L
Chromium	3/11/92	ND	50	ug/L
Lead	3/11- 3/12/92	ND	5	ug/L

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB ID: 2B2805-1  
MATRIX : WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/10/92  
DATE ANALYZED: 3/10/92

SAMPLE ID: MW-1

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

---

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-2  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 3/12/92

SAMPLE ID: MW-2

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
OTHER COMPOUNDS

---

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS  
with their estimated concentrations

---

Methyl(1-methylethyl)-benzene	8 ug/L
2,4-Dimethylphenyl	9 ug/L
1,4-Dimethyl-2-(1-methylethyl)-benzene	5 ug/L
Unknown substituted benzene	9 ug/L
1,2,4,5-Tetramethyl-benzene	4 ug/L
Unknown substituted benzene	12 ug/L
1-Methyl-4-(1-methylethyl)-benzene	10 ug/L
1-Methyl-2-(1-methylethyl)-benzene	5 ug/L
(1) Unknown	8 ug/L
1-(1,1-Dimethylethyl)-4-methyl-benzene	4 ug/L



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-2  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 3/12/92

SAMPLE ID: MW-2

PROJ:NADEP PEN/3221NE

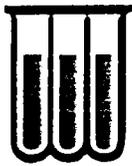
CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	8
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\*\* (None Detected, lower detectable limit = ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	98	(75-123)	(85-126)	(85-138)
Toluene-d8	103	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	109	(86-115)	(84-124)	(83-128)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-2  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/10/92

SAMPLE ID: MW-2

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059

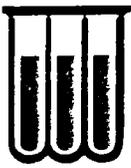
BASE/NEUTRAL -- EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS (1 of 2)

HRS84297

---

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-2  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/10/92

SAMPLE ID: MW-2

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
 J (Detected, but below quantitation limit: estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	92	(22-135)	(10-155)
Fluorobiphenyl	80	(34-140)	(12-153)
Terphenyl-d14	55	(10-132)	(13-140)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-2  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/10/92

SAMPLE ID: MW-2

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

EXTRACTABLE ORGANICS  
OTHER COMPOUNDS

---

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS  
with their estimated concentrations

---

2,6-Dimethyl-undecane	8 ug/L
2,3,6-Trimethyl-octane	10 ug/L
9-Octyl-heptadecane	5 ug/L



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-2  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/10/92

SAMPLE ID: MW-2

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

ACID EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
2-Fluorophenol	84	(17-95)	(24-118)
Phenol-d5	77	(11-89)	(17-124)
2,4,6-Tribromophenol	106	(10-134)	(10-156)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB # : 2B2805-2  
MATRIX : WATER

DATE RECEIVED: 2/28/92

SAMPLE ID : MW-2

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT  
SELECTED LIST

HRS84297

---

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	3/11/92	ND	10	ug/L
Cadmium	3/11/92	ND	10	ug/L
Chromium	3/11/92	ND	50	ug/L
Lead	3/11- 3/12/92	ND	5	ug/L

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB ID: 2B2805-2  
MATRIX : WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/10/92  
DATE ANALYZED: 3/10/92

SAMPLE ID: MW-2

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

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	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	4	mg/L	1

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-3  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 3/12/92

SAMPLE ID: MW-3

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	7
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\*\* (None Detected, lower detectable limit = ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	99	(75-123)	(85-126)	(85-138)
Toluene-d8	104	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	93	(86-115)	(84-124)	(83-128)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-3  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-3

PROJ:NADEP PEN/3221NE

BASE/NEUTRAL -- EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS (1 of 2)

CERTIFICATION #: E84059  
HRS84297

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,3-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	1,4-Dichlorobenzene	ND
Benzo(k)fluoranthene	ND	3,3'-Dichlorobenzidine	ND
Benzo(ghi)perylene	ND	Diethyl phthalate	ND
Benzo(a)pyrene	ND	Dimethyl phthalate	ND
Bis(2-Chloroethoxy)methane	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroisopropyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluoranthene	ND
4-Bromophenyl phenyl ether	ND	Fluorene	ND
Butyl benzyl phthalate	ND	Hexachlorobenzene	ND
2-Chloronaphthalene	ND	Hexachlorobutadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachlorocyclopentadiene	ND
Chrysene	ND	Hexachloroethane	ND
		Indeno(1,2,3-cd)pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-3  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-3

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

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Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit: estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	82	(22-135)	(10-155)
Fluorobiphenyl	79	(34-140)	(12-153)
Terphenyl-d14	88	(10-132)	(13-140)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-3  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-3

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

ACID EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
2-Fluorophenol	84	(17-95)	(24-118)
Phenol-d5	78	(11-89)	(17-124)
2,4,6-Tribromophenol	89	(10-134)	(10-156)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB # : 2B2805-3  
MATRIX : WATER

DATE RECEIVED: 2/28/92

SAMPLE ID : MW-3

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

METALS ANALYTICAL REPORT  
SELECTED LIST

---

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	3/11/92	ND	10	ug/L
Cadmium	3/11/92	ND	10	ug/L
Chromium	3/11/92	ND	50	ug/L
Lead	3/11- 3/12/92	ND	5	ug/L

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB ID: 2B2805-3  
MATRIX : WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/10/92  
DATE ANALYZED: 3/10/92

SAMPLE ID: MW-3

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

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	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-4  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 3/12/92

SAMPLE ID: MW-4

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059

VOLATILE ORGANICS  
USEPA METHOD 624 - GC/MS

HRS84297

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	7
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\*\* (None Detected, lower detectable limit = ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	97	(75-123)	(85-126)	(85-138)
Toluene-d8	102	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	94	(86-115)	(84-124)	(83-128)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-4  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-4

PROJ:NADEP PEN/3221NE

BASE/NEUTRAL -- EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS (1 of 2)

CERTIFICATION #: E84059  
HRS84297

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Ben-zidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-4  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-4

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297  
BASE/NEUTRAL EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit: estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	67	(22-135)	(10-155)
Fluorobiphenyl	30	(34-140)	(12-130)
Terphenyl-d14	32	(10-132)	(13-140)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-4  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-4

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

ACID EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
2-Fluorophenol	78	(17-95)	(24-118)
Phenol-d5	11	(11-89)	(11-124)
2,4,6-Tribromophenol	59	(10-134)	(10-156)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB # : 2B2805-4  
MATRIX : WATER

DATE RECEIVED: 2/28/92

SAMPLE ID : MW-4

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT  
SELECTED LIST

HRS84297

---

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	3/11/92	ND	10	ug/L
Cadmium	3/11/92	ND	10	ug/L
Chromium	3/11/92	ND	50	ug/L
Lead	3/11- 3/12/92	ND	5	ug/L

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB ID: 2B2805-4  
MATRIX : WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/10/92  
DATE ANALYZED: 3/10/92

SAMPLE ID: MW-4

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

---

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-13  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 3/12/92

SAMPLE ID: DUPLICATE 1

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059

VOLATILE ORGANICS  
USEPA METHOD 624 - GC/MS

HRS84297

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	39
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\*\* (None Detected, lower detectable limit = ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	84	(75-123)	(85-126)	(85-138)
Toluene-d8	102	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	89	(86-115)	(84-124)	(83-128)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-13  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: DUPLICATE 1

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (1 of 2)

---

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzydine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-13  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: DUPLICATE 1

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS (2 of 2)

HRS84297

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit: estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	59	(22-135)	(10-155)
Fluorobiphenyl	68	(34-140)	(12-153)
Terphenyl-d14	39	(10-132)	(13-140)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-13  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: DUPLICATE 1

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

ACID EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
2-Fluorophenol	75	(17-95)	(24-118)
Phenol-d5	59	(11-89)	(17-124)
2,4,6-Tribromophenol	45	(10-134)	(10-156)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB # : 2B2805-13  
MATRIX : WATER

DATE RECEIVED: 2/28/92

SAMPLE ID : DUPLICATE 1

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

METALS ANALYTICAL REPORT  
SELECTED LIST

---

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	3/11/92	ND	10	ug/L
Cadmium	3/11/92	ND	10	ug/L
Chromium	3/11/92	ND	50	ug/L
Lead	3/11- 3/12/92	ND	5	ug/L

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB ID: 2B2805-13  
MATRIX : WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/10/92  
DATE ANALYZED: 3/10/92

SAMPLE ID: DUPLICATE 1

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

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	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-5  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 3/12/92

SAMPLE ID: MW-5

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	8
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\*\* (None Detected, lower detectable limit = ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		
		WATER	SOIL	POWDER
1,2-Dichloroethane	98	(75-123)	(85-126)	(85-138)
Toluene-d8	101	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	94	(86-115)	(84-124)	(83-128)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-5  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-5

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297  
BASE/NEUTRAL -- EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-5  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-5

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
BASE/NEUTRAL EXTRACTABLE ORGANICS HRS84297  
USEPA METHOD 625 - GC/MS (2 of 2)

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Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit: estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	68	(22-135)	(10-155)
Fluorobiphenyl	72	(24-140)	(12-152)
Terphenyl-d14	57	(10-132)	(13-140)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-5  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-5

PROJ:NADEP PEN/3221NE

ACID EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS

CERTIFICATION #: E84059  
HRS84297

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
2-Fluorophenol	47	(17-95)	(24-118)
Phenol-d5	57	(11-89)	(17-124)
2,4,6-Tribromophenol	36	(10-134)	(10-156)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-5  
MATRIX : WATER

DATE RECEIVED: 2/28/92

SAMPLE ID : MW-5

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT  
SELECTED LIST

HRS84297

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Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	3/11/92	ND	10	ug/L
Cadmium	3/11/92	ND	10	ug/L
Chromium	3/11/92	ND	50	ug/L
Lead	3/11- 3/12/92	ND	5	ug/L

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2D1601-7  
MATRIX: WATER

DATE RECEIVED: 4/16/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 4/20/92

SAMPLE ID: 3221NE-MW6 NADEP PEN

CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	3
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\*\* (None Detected, lower detectable limit = ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	89	(75-123)	(85-126)	(85-138)
Toluene-d8	100	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	98	(86-115)	(84-124)	(83-128)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-6  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-6

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297  
BASE/NEUTRAL -- EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzenidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-6  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-6

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
BASE/NEUTRAL EXTRACTABLE ORGANICS HRS84297  
USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit: estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	58	(22-135)	(10-155)
Fluorobiphenyl	75	(34-140)	(12-153)
Terphenyl-d14	29	(10-132)	(13-140)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-6  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-6

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

ACID EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SUBROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
2-Fluorophenol	76	(17-95)	(24-118)
Phenol-d5	69	(11-89)	(17-124)
2,4,6-Tribromophenol	45	(10-134)	(10-156)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB # : 2B2805-6  
MATRIX : WATER

DATE RECEIVED: 2/28/92

SAMPLE ID : MW-6

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT  
SELECTED LIST

HRS84297

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Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	3/11/92	ND	10	ug/L
Cadmium	3/11/92	ND	10	ug/L
Chromium	3/11/92	ND	50	ug/L
Lead	3/11- 3/12/92	ND	5	ug/L

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB ID: 2B2805-6  
MATRIX : WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/10/92  
DATE ANALYZED: 3/10/92

SAMPLE ID: MW-6

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

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	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-7  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 3/12/92

SAMPLE ID: MW-7

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\*\* (None Detected, lower detectable limit = ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	96	(75-123)	(85-126)	(85-138)
Toluene-d8	101	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	94	(86-115)	(84-124)	(83-128)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-7  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/10/92

SAMPLE ID: MW-7

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
BASE/NEUTRAL -- EXTRACTABLE ORGANICS HRS84297  
USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Ben-zidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-7  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/10/92

SAMPLE ID: MW-7

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
BASE/NEUTRAL EXTRACTABLE ORGANICS HRS84297  
USEPA METHOD 625 - GC/MS (2 of 2)

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Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit: estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	32	(22-135)	(10-155)
Fluorobiphenyl	45	(34-140)	(12-153)
Terphenyl-d14	21	(10-132)	(13-140)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-7  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-7

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

ACID EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS

---

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
2-Fluorophenol	38	(17-95)	(24-118)
Phenol-d5	33	(11-89)	(17-124)
2,4,6-Tribromophenol	28	(10-134)	(10-156)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB # : 2B2805-7  
MATRIX : WATER

DATE RECEIVED: 2/28/92

SAMPLE ID : MW-7

PROJ:NADEP PEN/3221NE

METALS ANALYTICAL REPORT  
SELECTED LIST

CERTIFICATION #: E84059  
HRS84297

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Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	3/11/92	ND	10	ug/L
Cadmium	3/11/92	ND	10	ug/L
Chromium	3/11/92	ND	50	ug/L
Lead	3/11- 3/12/92	ND	5	ug/L

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB ID: 2B2805-7  
MATRIX : WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/10/92  
DATE ANALYZED: 3/10/92

SAMPLE ID: MW-7

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

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	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-8  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 3/12/92

SAMPLE ID: MW-8

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\*\* (None Detected, lower detectable limit = ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	97	(75-123)	(85-126)	(85-138)
Toluene-d8	101	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	91	(86-115)	(84-124)	(83-128)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-8  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 3/12/92

SAMPLE ID: MW-8

PROJ:NADEP PEN/3221NE

VOLATILE ORGANICS  
OTHER COMPOUNDS

CERTIFICATION #: E84059  
HRS84297

---

Acetone

53 ug/L

---

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS  
with their estimated concentrations

---



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-8  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-8

PROJ:NADEP PEN/3221NE

BASE/NEUTRAL -- EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS (1 of 2)

CERTIFICATION #: E84059  
HRS84297

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benididine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-8  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-8

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS (2 of 2)

HRS84297

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
 J (Detected, but below quantitation limit: estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	30	(22-135)	(10-155)
1-fluorobiphenyl	31	(34-140)	(12-155)
Terphenyl-d14	18	(10-132)	(13-140)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-8  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/10/92

SAMPLE ID: MW-8

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

EXTRACTABLE ORGANICS  
OTHER COMPOUNDS

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MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS  
with their estimated concentrations

---

(3) Unknown(s)

59 ug/L



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-8  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-8

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

ACID EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
2-Fluorophenol	39	(17-95)	(24-118)
Phenol-d3	29	(11-89)	(17-124)
2,4,6-Tribromophenol	15	(10-134)	(10-156)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB # : 2B2805-8  
MATRIX : WATER

DATE RECEIVED: 2/28/92

SAMPLE ID : MW-8

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

METALS ANALYTICAL REPORT  
SELECTED LIST

---

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	3/11/92	ND	10	ug/L
Cadmium	3/11/92	ND	10	ug/L
Chromium	3/11/92	ND	50	ug/L
Lead	3/11- 3/12/92	ND	5	ug/L

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB ID: 2B2805-8  
MATRIX : WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/10/92  
DATE ANALYZED: 3/10/92

SAMPLE ID: MW-8

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

**TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT**

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	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-14  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 3/12/92

SAMPLE ID: DUPLICATE 2

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	25
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\*\* (None Detected, lower detectable limit = ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	91	(75-123)	(85-126)	(85-138)
Toluene-d8	100	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	94	(86-115)	(84-124)	(83-128)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-14  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: DUPLICATE 2

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297  
BASE/NEUTRAL -- EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-14  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: DUPLICATE 2

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS (2 of 2)

HRS84297

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit: estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	40	(22-135)	(10-155)
Fluorobiphenyl	33	(34-140)	(12-153)
Terphenyl-d14	15	(10-132)	(13-140)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-14  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: DUPLICATE 2

PROJ:NADEP PEN/3221NE

EXTRACTABLE ORGANICS  
OTHER COMPOUNDS

CERTIFICATION #: E84059  
HRS84297

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MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS  
with their estimated concentrations

---

5-Methyl-undecane  
3-Methyl-undecane

11 ug/L  
18 ug/L



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-14  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: DUPLICATE 2

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

ACID EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
2-Fluorophenol	67	(17-95)	(24-118)
Phenol-d5	39	(11-89)	(17-124)
2,4,6-Tribromophenol	16	(10-134)	(10-156)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-14  
MATRIX : WATER

DATE RECEIVED: 2/28/92

SAMPLE ID : DUPLICATE 2

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT  
SELECTED LIST

HRS84297

---

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	3/11/92	ND	10	ug/L
Cadmium	3/11/92	ND	10	ug/L
Chromium	3/11/92	ND	50	ug/L
Lead	3/11- 3/12/92	ND	5	ug/L

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB ID: 2B2805-14  
MATRIX : WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/10/92  
DATE ANALYZED: 3/10/92

SAMPLE ID: DUPLICATE 2

PROJ:NADEP PEN/3221NE

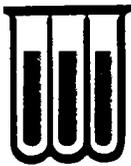
CERTIFICATION #: E84059  
HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

---

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	1	mg/L	1

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2D1601-8  
MATRIX: WATER

DATE RECEIVED: 4/16/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 4/21/92

SAMPLE ID: 3221NE-MW9 NADEP PEN

CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\*\* (None Detected, lower detectable limit = ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	90	(75-123)	(85-126)	(85-138)
Toluene-d8	102	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	91	(86-115)	(84-124)	(83-128)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2D1601-8  
MATRIX: WATER

DATE RECEIVED: 4/16/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 4/21/92

SAMPLE ID: 3221NE-MW9

NADEP PEN

CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
OTHER COMPOUNDS

---

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS  
with their estimated concentrations

---

1,2-Dichloro-1,1,2-triflouro ethane

3 ug/L



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-9  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-9

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS (1 of 2)

HRS84297

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Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzydine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-9  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-9

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
BASE/NEUTRAL EXTRACTABLE ORGANICS HRS84297  
USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit: estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	61	(22-135)	(10-155)
Fluorobiphenyl	73	(34-140)	(12-153)
Terphenyl-d14	46	(10-132)	(13-140)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-9  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-9

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

ACID EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
2-Fluorophenol	71	(17-95)	(24-118)
Phenol-d3	52	(11-89)	(17-124)
2,4,6-Tribromophenol	67	(10-134)	(10-156)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB # : 2B2805-9  
MATRIX : WATER

DATE RECEIVED: 2/28/92

SAMPLE ID : MW-9

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

METALS ANALYTICAL REPORT  
SELECTED LIST

---

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	3/11/92	ND	10	ug/L
Cadmium	3/11/92	ND	10	ug/L
Chromium	3/11/92	ND	50	ug/L
Lead	3/11- 3/12/92	ND	5	ug/L

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB ID: 2B2805-9  
MATRIX : WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/10/92  
DATE ANALYZED: 3/10/92

SAMPLE ID: MW-9

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

---

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-10  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 3/12/92

SAMPLE ID: MW-10

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	3
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	40
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	1
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	5
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	30
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\*\* (None Detected, lower detectable limit = ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	97	(75-123)	(85-126)	(85-138)
Toluene-d8	101	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	97	(86-115)	(84-124)	(83-128)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-10  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 3/12/92

SAMPLE ID: MW-10

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
OTHER COMPOUNDS

---

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS  
with their estimated concentrations

---

1,3-Dimethyl-benzene	200 ug/L
Propyl benzene	10 ug/L
1-Ethyl-2-methyl-benzene	60 ug/L
1-Ethyl-4-methyl benzene	42 ug/L
1,2,3-Trimethyl-benzene	110 ug/L
(1-Methylethyl)-benzene	36 ug/L
1-Methyl-3-propyl benzene	12 ug/L
1-Methyl-3-(1-methylethyl)-benzene	15 ug/L
1-Methyl-2-(1-methylethyl)-benzene	13 ug/L
1-Ethyl-3-methyl-benzene	18 ug/L



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-10  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-10

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS (1 of 2)

HRS84297

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-10  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-10

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
BASE/NEUTRAL EXTRACTABLE ORGANICS HRS84297  
USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	13
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
 J (Detected, but below quantitation limit: estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	81	(22-135)	(10-155)
Fluorobiphenyl	84	(34-140)	(12-153)
Terphenyl-d14	90	(10-132)	(13-140)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-10  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-10

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

EXTRACTABLE ORGANICS  
OTHER COMPOUNDS

---

1-Methylnaphthalene	7 ug/L
2-Methylnaphthalene	6 ug/L

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS  
with their estimated concentrations

---

1,3-Dimethyl-benzene	25 ug/L
1-Ethyl-4-methyl-benzene	26 ug/L
1,3,5-Trimethyl-benzene	19 ug/L
1-Ethyl-3-methyl-benzene	8 ug/L
1,2,4-Trimethyl-benzene	39 ug/L
1-Ethyl-3,5-dimethyl-benzene	6 ug/L
1,2,4,5-Tetramethyl-benzene	10 ug/L
1-Ethyl-2,4-dimethyl-benzene	8 ug/L



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-10  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-10

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

ACID EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
2-Fluorophenol	86	(17-95)	(24-118)
Phenol-d5	72	(11-89)	(17-124)
2,4,6-Tribromophenol	76	(10-134)	(10-156)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB # : 2B2805-10  
MATRIX : WATER

DATE RECEIVED: 2/28/92

SAMPLE ID : MW-10

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT  
SELECTED LIST

HRS84297

---

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	3/11/92	ND	10	ug/L
Cadmium	3/11/92	ND	10	ug/L
Chromium	3/11/92	ND	50	ug/L
Lead	3/11- 3/12/92	ND	5	ug/L

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB ID: 2B2805-10  
MATRIX : WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/10/92  
DATE ANALYZED: 3/10/92

SAMPLE ID: MW-10

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

---

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2D1601-9  
MATRIX: WATER

DATE RECEIVED: 4/16/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 4/21/92

SAMPLE ID: 3221NE-MW10 NADEP PEN

CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	44
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	92
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE: ND (None Detected, lower detectable limit = 3 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 30 ug/L) as rec'd  
 ND\*\* (None Detected, lower detectable limit = ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	98	(75-123)	(85-126)	(85-138)
Toluene-d8	103	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	96	(86-115)	(84-124)	(83-128)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2D1601-9  
MATRIX: WATER

DATE RECEIVED: 4/16/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 4/21/92

SAMPLE ID: 3221NE-MW10

NADEP PEN

CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
OTHER COMPOUNDS

---

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS  
with their estimated concentrations

---

(1-Methylethyl) benzene	11 ug/L
Propyl benzene	11 ug/L
1-Ethyl-2-methyl benzene	44 ug/L
1,3,5-Trimethyl benzene	29 ug/L
1-Ethyl-3-methyl benzene	89 ug/L
1-Ethyl-4-methyl benzene	23 ug/L
4-Methyl benzoic acid-2-oxo-2-phenylethyl ester	13 ug/L
1-Methyl-3-(1-methylethyl) benzene	15 ug/L
Substituted benzene	12 ug/L
1-Methyl-2-(1-methylethyl) benzene	9 ug/L



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2D2302-1  
MATRIX: WATER

DATE RECEIVED: 4/23/92  
DATE EXTRACTED: 4/23/92  
DATE ANALYZED: 4/29/92

SAMPLE ID: 3221NE-MW10 NADEP PEN

CERTIFICATION #: E84059  
BASE/NEUTRAL -- EXTRACTABLE ORGANICS HRS84297  
USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzydine	ND	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2D2302-1  
MATRIX: WATER

DATE RECEIVED: 4/23/92  
DATE EXTRACTED: 4/23/92  
DATE ANALYZED: 4/29/92

SAMPLE ID: 3221NE-MW10 NADEP PEN

CERTIFICATION #: E84059  
BASE/NEUTRAL EXTRACTABLE ORGANICS HRS84297  
USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	16
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
 J (Detected, but below quantitation limit: estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	94	(22-135)	(10-155)
Fluorobiphenyl	79	(34-140)	(12-153)
Terphenyl-d14	72	(10-132)	(13-140)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2D2302-1  
MATRIX: WATER

DATE RECEIVED: 4/23/92  
DATE EXTRACTED: 4/23/92  
DATE ANALYZED: 4/29/92

SAMPLE ID: 3221NE-MW10 NADEP PEN

CERTIFICATION #: E84059  
HRS84297

EXTRACTABLE ORGANICS  
OTHER COMPOUNDS

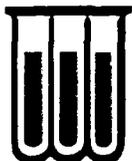
---

1-Methyl naphthalene	7 ug/L
2-Methyl naphthalene	6 ug/L

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS  
with their estimated concentrations

---

Ethyl benzene	27 ug/L
Benzene, 1,2-dimethyl	57 ug/L
Benzene, 1-ethyl-4-methyl	32 ug/L
Benzene, 1,2,4-trimethyl	21 ug/L
Benzene, 1,2,3-trimethyl	29 ug/L
Benzene, 4-ethyl-1,2-dimethyl	12 ug/L



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2D2302-1  
MATRIX: WATER

DATE RECEIVED: 4/23/92  
DATE EXTRACTED: 4/23/92  
DATE ANALYZED: 4/29/92

SAMPLE ID: 3221NE-MW10 NADEP PEN

CERTIFICATION #: E84059  
HRS84297

ACID EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS

---

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND
2-Methyl-4,6-dinitrophenol	ND
2-Nitrophenol	ND
4-Nitrophenol	ND
Pentachlorophenol	ND
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
2-Fluorophenol	92	(17-95)	(24-118)
Phenol-d5	83	(11-89)	(17-124)
2,4,6-Tribromophenol	108	(10-134)	(10-156)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB # : 2D1601-9  
MATRIX : WATER

DATE RECEIVED: 4/16/92

SAMPLE ID : 3221NE-MW10      NADEP PEN

CERTIFICATION #: E84059  
HRS84297

METALS ANALYTICAL REPORT  
SELECTED LIST

---

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	4/28/92	ND	10	ug/L
Cadmium	4/28/92	ND	10	ug/L
Chromium	4/28/92	ND	50	ug/L
Lead	4/28/92	ND	5	ug/L

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB ID: 2D1601-9  
MATRIX : WATER

DATE RECEIVED: 4/16/92  
DATE EXTRACTED: 4/30/92  
DATE ANALYZED: 5/ 1/92

SAMPLE ID: 3221NE-MW10 NADEP PEN

CERTIFICATION #: E84059  
HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

---

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2D1601-10  
MATRIX: WATER

DATE RECEIVED: 4/16/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 4/21/92

SAMPLE ID: 3221NE-MW11 NADEP PEN

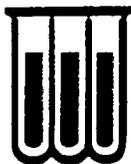
CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	4
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\*\* (None Detected, lower detectable limit = ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	96	(75-123)	(85-126)	(85-138)
Toluene-d8	101	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	97	(86-115)	(84-124)	(83-128)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2D1601-10  
MATRIX: WATER

DATE RECEIVED: 4/16/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 4/21/92

SAMPLE ID: 3221NE-MW11 NADEP PEN  
VOLATILE ORGANICS  
OTHER COMPOUNDS

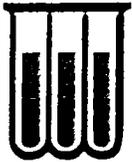
CERTIFICATION #: E84059  
HRS84297

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MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS  
with their estimated concentrations

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1,2,-Dichloro-1,1,2-triflouro ethane	23 ug/L
2,3,4-Trimethyl pentane	1 ug/L
3,3-Dimethyl hexane	4 ug/L
(1,1-Dimethylethyl) benzene	2 ug/L
1,2-Diethyl benzene	4 ug/L
2,3-Dihydro-1-methyl-1H-indene	1 ug/L
2-Butenyl benzene	2 ug/L
2,3-Dihydro-1,1-dimethyl-1H-indene	4 ug/L
(1-Methyl-1-propenyl) benzene	2 ug/L
1,2,3,4-Tetrahydro-1,4-methoronaphthalene-9-ol	1 ug/L



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-11  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-11

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
BASE/NEUTRAL -- EXTRACTABLE ORGANICS HRS84297  
USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-11  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-11

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
BASE/NEUTRAL EXTRACTABLE ORGANICS HRS84297  
USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
 J (Detected, but below quantitation limit: estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	80	(22-135)	(10-155)
Fluorobiphenyl	85	(34-140)	(12-153)
Terphenyl-d14	70	(10-132)	(13-140)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-11  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-11

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

ACID EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
2-Fluorophenol	75	(17-95)	(24-118)
Phenol-d5	59	(11-89)	(17-124)
2,4,6-Tribromophenol	80	(10-134)	(10-156)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB # : 2B2805-11  
MATRIX : WATER

DATE RECEIVED: 2/28/92

SAMPLE ID : MW-11

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

METALS ANALYTICAL REPORT  
SELECTED LIST

---

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	3/11/92	ND	10	ug/L
Cadmium	3/11/92	ND	10	ug/L
Chromium	3/11/92	ND	50	ug/L
Lead	3/11- 3/12/92	ND	5	ug/L

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB ID: 2B2805-11  
MATRIX : WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/10/92  
DATE ANALYZED: 3/10/92

SAMPLE ID: MW-11

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

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	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-12  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 3/12/92

SAMPLE ID: MW-12D

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	28
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\*\* (None Detected, lower detectable limit = ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	89	(75-123)	(85-126)	(85-138)
Toluene-d8	101	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	97	(86-115)	(84-124)	(83-128)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-12  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-12D

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
BASE/NEUTRAL -- EXTRACTABLE ORGANICS HRS84297  
USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(k)fluoranthene	ND	3,3'-Dichlorobenzidine	ND
Benzo(ghi)perylene	ND	Diethyl phthalate	ND
Benzo(a)pyrene	ND	Dimethyl phthalate	ND
Bis(2-Chloroethoxy)methane	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroisopropyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-12  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-12D

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
 J (Detected, but below quantitation limit: estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	71	(22-135)	(10-155)
Fluorobiphenyl	80	(34-140)	(12-153)
Terphenyl-d14	86	(10-132)	(13-140)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-12  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: MW-12D

PROJ:NADEP PEN/3221NE

ACID EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS

CERTIFICATION #: E84059  
HRS84297

---

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
2-Fluorophenol	57	(17-95)	(24-118)
Phenol-d5	45	(11-89)	(17-124)
2,4,6-Tribromophenol	31	(10-134)	(10-156)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-12  
MATRIX : WATER

DATE RECEIVED: 2/28/92

SAMPLE ID : MW-12D

PROJ:NADEP PEN/3221NE

METALS ANALYTICAL REPORT  
SELECTED LIST

CERTIFICATION #: E84059  
HRS84297

---

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	3/11/92	ND	10	ug/L
Cadmium	3/11/92	ND	10	ug/L
Chromium	3/11/92	ND	50	ug/L
Lead	3/11- 3/12/92	ND	5	ug/L

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB ID: 2B2805-12  
MATRIX : WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/10/92  
DATE ANALYZED: 3/10/92

SAMPLE ID: MW-12D

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

---

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-15  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 3/23/92

SAMPLE ID: EQUIPMENT BLANK

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\*\* (None Detected, lower detectable limit = ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	79	(75-123)	(85-126)	(85-138)
Toluene-d8	102	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	88	(86-115)	(84-124)	(83-128)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-15  
MATRIX: WATER

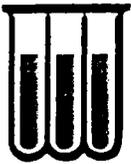
DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: EQUIPMENT BLANK PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
BASE/NEUTRAL -- EXTRACTABLE ORGANICS HRS84297  
USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-15  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: EQUIPMENT BLANK

PROJ:NADEP PEN/3221NE.

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

---

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit: estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	74	(22-135)	(10-155)
Fluorobiphenyl	86	(34-140)	(12-153)
Terphenyl-d14	97	(10-132)	(13-140)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-15  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/11/92

SAMPLE ID: EQUIPMENT BLANK PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

ACID EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
2-Fluorophenol	80	(17-95)	(24-118)
Phenol-d5	65	(11-89)	(17-124)
2,4,6-Tribromophenol	55	(10-134)	(10-156)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-15  
MATRIX : WATER

DATE RECEIVED: 2/28/92

SAMPLE ID : EQUIPMENT BLANK

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

METALS ANALYTICAL REPORT  
SELECTED LIST

---

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	3/11/92	ND	10	ug/L
Cadmium	3/11/92	ND	10	ug/L
Chromium	3/11/92	ND	50	ug/L
Lead	3/11- 3/12/92	ND	5	ug/L

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB ID: 2B2805-15  
MATRIX : WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/10/92  
DATE ANALYZED: 3/10/92

SAMPLE ID: EQUIPMENT BLANK

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

---

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-16  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 3/22/92

SAMPLE ID: TRIP BLANK

PROJ:NADEP PEN/3221NE

CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\*\* (None Detected, lower detectable limit = ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	87	(75-123)	(85-126)	(85-138)
Toluene-d8	100	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	92	(86-115)	(84-124)	(83-128)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2D1601-13  
MATRIX: WATER

DATE RECEIVED: 4/16/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 4/18/92

SAMPLE ID: TRIP BLANK NADEP PEN

CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\*\* (None Detected, lower detectable limit = ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	91	(75-123)	(85-126)	(85-138)
Toluene-d8	99	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	92	(86-115)	(84-124)	(83-128)



WADSWORTH/ALERT  
LABORATORIES

## QUALITY CONTROL SECTION

- Quality Control Summary
- Laboratory Blanks
- Laboratory Control Sample
- Matrix Spike/Matrix Spike Duplicate Results
- Sample Custody Documentation



WADSWORTH/ALERT  
LABORATORIES

QUALITY ASSURANCE / QUALITY CONTROL  
PROGRAM SUMMARY

Wadsworth/ALERT Laboratories considers continuous analytical method performance evaluations to be an integral portion of the data package, and routinely includes the pertinent QA/QC data associated with various analytical result reports. Brief discussions of the various QA/QC procedures utilized to measure acceptable method and matrix performance follow.

Surrogate Spike Recovery Evaluations

Known concentrations of designated surrogate spikes, consisting of a number of similar, non-method compounds or method compound analogues, are added, as appropriate, to routine GC and GC/MS sample fractions prior to extraction and analysis. The percent recovery determinations calculated from the subsequent analysis is an indication of the overall method efficiency for the individual sample. This surrogate spike recovery data is displayed alongside acceptable analytical method performance limits at the bottom of each applicable analytical result report sheet.

NOTE: Acceptable method performance for Base/Neutral Acid extractables is indicated by two (2) of three (3) surrogates for each fraction with a minimum recovery of ten (10) percent each. For Pesticides one (1) of two (2) surrogates meeting performance criteria is acceptable.

Laboratory Analytical Method Blank Evaluations

Laboratory analytical method blanks are systematically prepared and analyzed in order to continuously evaluate the system interferences and background contamination levels associated with each analytical method. These method blanks include all aspects of actual laboratory method analysis (chemical reagents, glassware, etc.), substituting laboratory reagent water or solid for actual sample. The method blank must not contain any analytes above the reported detection limit. The following common laboratory contaminants are exceptions to this rule provided they are not present at greater than five times the detection limit.

Volatiles

Methylene chloride  
Toluene  
2-Butanone  
Acetone

Semi-volatiles

Dimethyl phthalate  
Diethyl phthalate  
Di-n-butyl phthalate  
Butyl benzyl phthalate  
Bis (2-ethylhexyl) phthalate

Metals

Calcium  
Magnesium  
Sodium

A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method blanks.

Laboratory Analytical Method Check Sample Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to a laboratory reagent blank prior to extraction and analysis. Percent recovery determinations demonstrate the performance of the analytical method. Failure of a check sample to meet established laboratory recovery criteria is cause to stop the analysis until the problem is resolved.



WADSWORTH/ALERT  
LABORATORIES

QUALITY ASSURANCE / QUALITY CONTROL  
PROGRAM SUMMARY  
(cont'd)

At that time all associated samples must be re-analyzed. A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method check samples.

Matrix Spike (MS)/Matrix Spike Duplicate (MSD) Recovery Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to two of three separate aliquots of a sequentially predetermined sample prior to extraction and analysis. Percent recovery determinations are calculated from both of the spiked samples by comparison to the actual values generated from the unspiked sample. These percent recovery determinations indicate the accuracy of the analysis at recovering actual analytical method compounds from the matrix. Relative percent difference determinations calculated from a comparison of the MS/MSD recoveries demonstrate the precision of the analytical method. Actual percent recovery and relative percent difference data is displayed alongside their respective acceptable analytical method performance limits in the QA/QC section of the report. The MS/MSD are considered in control when the precision is within established control limits and the associated check sample has been found to be acceptable. A minimum of ten percent (10%) of all analyses are MS/MSD quality control samples.

\*\*\*\*\*EXAMPLE\*\*\*\*\*

COMPOUND	SAMPLE CONC.	MS %REC	MSD %REC	RPD	QC LIMITS	
					RPD	RECOVERY
4,4'-DDT	0	95	112	16	22	66-119
Benzene	10	86	93	8	20	39-150

(cmpd. name)	sample	1st%	2nd%	Rel.%	accep.	method
	result	recov.	recov.	diff.	perform	range

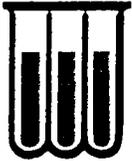
Analytical Result Qualifiers

The following qualifiers, as defined below, may be appended to analytical results in order to allow proper interpretation of the results presented:

J - indicates an estimated concentration (typically used when a dilution, matrix interference or instrumental limitation prevents accurate quantitation of a particular analyte).

B - indicates the presence of a particular analyte in the laboratory blank analyzed concurrently with the samples. Results must be interpreted accordingly.

DIL - indicates that because of matrix interferences and/or high analyte concentrations, it was necessary to dilute the sample to a point where the surrogate or spike concentrations fell below a quantifiable amount and could not be reported.



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-BK  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 3/11/92

SAMPLE ID: LABORATORY BLANK

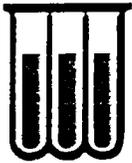
CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\*\* (None Detected, lower detectable limit = ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	97	(75-123)	(85-126)	(85-138)
Toluene-d8	102	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	95	(86-115)	(84-124)	(83-128)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-BK  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 3/12/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\*\* (None Detected, lower detectable limit = ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	99	(75-123)	(85-126)	(85-138)
Toluene-d8	101	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	93	(86-115)	(84-124)	(83-128)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-BK  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 3/20/92

SAMPLE ID: LABORATORY BLANK

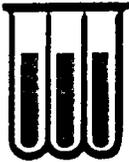
CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	3
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\*\* (None Detected, lower detectable limit = ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	96	(75-123)	(85-126)	(85-138)
Toluene-d8	100	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	92	(86-115)	(84-124)	(83-128)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-BK  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 3/21/92

SAMPLE ID: LABORATORY BLANK

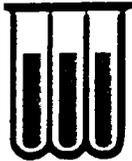
CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\*\* (None Detected, lower detectable limit = ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	87	(75-123)	(85-126)	(85-138)
Toluene-d8	101	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	91	(86-115)	(84-124)	(83-128)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-BK  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 3/23/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\*\* (None Detected, lower detectable limit = ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	99	(75-123)	(85-126)	(85-138)
Toluene-d8	94	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	94	(86-115)	(84-124)	(83-128)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-BK  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/10/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059  
BASE/NEUTRAL -- EXTRACTABLE ORGANICS HRS84297  
USEPA METHOD 625 - GC/MS (1 of 2)

---

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-BK  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/ 2/92  
DATE ANALYZED: 3/10/92

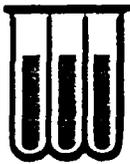
SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059  
BASE/NEUTRAL EXTRACTABLE ORGANICS HRS84297  
USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
 J (Detected, but below quantitation limit: estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	72	(22-135)	(10-155)
Fluorobiphenyl	75	(34-140)	(12-153)
Terphenyl-d14	84	(10-132)	(13-140)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2B2805-BK  
MATRIX: WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/2/92  
DATE ANALYZED: 3/10/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059  
HRS84297

ACID EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS

---

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
2-Fluorophenol	83	(17-95)	(24-118)
Phenol-d5	74	(11-89)	(17-124)
2,4,6-Tribromophenol	105	(10-134)	(10-156)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB # : 2B2805-BK  
MATRIX : WATER

DATE RECEIVED: 2/28/92

SAMPLE ID : LABORATORY BLANK

CERTIFICATION #: E84059  
HRS84297

METALS ANALYTICAL REPORT  
SELECTED LIST

---

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	3/11/92	ND	10	ug/L
Cadmium	3/11/92	ND	10	ug/L
Chromium	3/11/92	ND	50	ug/L
Lead	3/11- 3/12/92	ND	5	ug/L

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB ID: 2B2805-BK  
MATRIX : WATER

DATE RECEIVED: 2/28/92  
DATE EXTRACTED: 3/10/92  
DATE ANALYZED: 3/10/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059  
HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

---

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

LAB ID : LCS  
MATRIX : WATER  
METHOD : 624  
RUN ID : W2124

DATE EXTRACTED: N/A  
DATE ANALYZED : 03/11/92

LABORATORY CONTROL SAMPLE RESULTS

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	QC LIMITS	
			RPD	%REC
1,1-Dichloroethene	W2124	57	40	56-133
Trichloroethene		92	20	67-106
Chlorobenzene		95	21	78-122
Toluene		100	30	64-128
Benzene		90	21	83-123
Dichlorobromomethane		92	25	71-123



WADSWORTH/ALERT  
LABORATORIES

LAB ID : LCS  
MATRIX : WATER  
METHOD : 624  
RUN ID : W2146

DATE EXTRACTED: N/A  
DATE ANALYZED : 03/12/92

LABORATORY CONTROL SAMPLE RESULTS

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	QC LIMITS	
			RPD	%REC
1,1-Dichloroethene	W2146	56	40	56-133
Trichloroethene		89	20	67-106
Chlorobenzene		92	21	78-122
Toluene		99	30	64-128
Benzene		88	21	83-123
Dichlorobromomethane		97	25	71-123



WADSWORTH/ALERT  
LABORATORIES

LAB ID : LCS  
MATRIX : WATER  
METHOD : 624  
RUN ID : W2294

DATE EXTRACTED: N/A  
DATE ANALYZED : 03/20/92

LABORATORY CONTROL SAMPLE RESULTS

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	QC LIMITS	
			RPD	%REC
1,1-Dichloroethene	W2294	69	40	56-133
Trichloroethene		95	20	67-106
Chlorobenzene		96	21	78-122
Toluene		111	30	64-128
Benzene		105	21	83-123
Dichlorobromomethane		83	25	71-123



WADSWORTH/ALERT  
LABORATORIES

LAB ID : LCS  
MATRIX : WATER  
METHOD : 624  
RUN ID : W2312

DATE EXTRACTED: N/A  
DATE ANALYZED : 03/21/92

LABORATORY CONTROL SAMPLE RESULTS

COMPOUND	ANALYTICAL RUN ID #	LCS	QC LIMITS
		%REC	RPD %REC
1,1-Dichloroethene	W2312	71	40 56-133
Trichloroethene		99	20 67-106
Chlorobenzene		100	21 78-122
Toluene		114	30 64-128
Benzene		110	21 83-123
Dichlorobromomethane		108	25 71-123



WADSWORTH/ALERT  
LABORATORIES

LAB ID : LCS  
MATRIX : WATER  
METHOD : 624  
RUN ID : W2329

DATE EXTRACTED : N/A  
DATE ANALYZED : 03/23/92

LABORATORY CONTROL SAMPLE RESULTS

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	QC LIMITS	
			RPD	%REC
1,1-Dichloroethene	W2329	68	40	56-133
Trichloroethene		105	20	67-106
Chlorobenzene		102	21	78-122
Toluene		117	30	64-128
Benzene		109	21	83-123
Dichlorobromomethane		103	25	71-123



WADSWORTH/ALERT  
LABORATORIES

LAB #: 2B2805-LCS  
MATRIX: WATER  
METHOD: 625

DATE RECEIVED: 02/28/92  
DATE EXTRACTED: 03/02/92  
DATE ANALYZED: 03/10/92

LABORATORY CHECK SAMPLE RECOVERY

COMPOUND	LCS %REC	QC LIMITS RECOVERY
1,2,4-Trichlorobenzene	96	20-111
Acenaphthene	83	31-105
2,4-Dinitrotoluene	79	22-107
Pyrene	86	12-108
Nitrosodipropylamine	81	42-125
1,4-Dichlorobenzene	71	31-99



WADSWORTH/ALERT  
LABORATORIES

LAB #: 2B2805-LCS  
MATRIX: WATER  
METHOD: 625

DATE RECEIVED: 02/28/92  
DATE EXTRACTED: 03/02/92  
DATE ANALYZED: 03/10/92

LABORATORY CHECK SAMPLE RECOVERY

COMPOUND	LCS %REC	QC LIMITS RECOVERY
Pentachlorophenol	21	10-100
Phenol	74	12-90
2-Chlorophenol	81	30-100
4-Chloro-o-cresol	78	12-109
4-Nitrophenol	42	10-102



WADSWORTH/ALERT  
LABORATORIES

LAB #: 2B2805-LCS  
MATRIX: WATER

DATE RECEIVED: 02/28/92  
DATE PREP'D: 03/11/92  
DATE ANALYZED: 03/11/92 to  
03/12/92

LABORATORY CHECK SAMPLE RECOVERY

COMPOUND	LCS %REC	QC LIMITS RECOVERY
Arsenic, furnace	103	54-130
Cadmium	89	78-113
Chromium	95	79-121
Lead, furnace	97	64-131



WADSWORTH/ALERT  
LABORATORIES

LAB #: 2B2805-LCS  
MATRIX: WATER

DATE RECEIVED: 02/28/92  
DATE EXTRACTED: 03/10/92  
DATE ANALYZED: 03/10/92

LABORATORY CHECK SAMPLE

COMPOUND	LCS %REC	QC LIMITS RECOVERY
Tot. Rec. Pet. Hydrocarbons	99	75-124



WADSWORTH/ALERT  
LABORATORIES

LAB#: 2B2805-5  
MATRIX: WATER  
METHOD: 624

DATE RECEIVED: 02/28/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 03/21/92

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	MS %REC	MSD %REC	RPD	QC RPD	LIMITS RECOVERY
1,1-Dichloroethene	78	74	5	19	63-123
Trichloroethene	96	99	3	10	75-115
Chlorobenzene	96	94	2	13	74-113
Toluene	117	112	4	23	75-122
Benzene	107	105	2	16	76-126
Dichlorobromomethane	100	102	2	15	67-114



WADSWORTH/ALERT  
LABORATORIES

LAB#: 2B2805-4  
MATRIX: WATER  
METHOD: 625

DATE RECEIVED: 02/28/92  
DATE EXTRACTED: 03/02/92  
DATE ANALYZED: 03/10/92

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	MS %REC	MSD %REC	RPD	QC LIMITS RPD RECOVERY
1,2,4-Trichlorobenzene	81	71	13	15 27-65
Acenaphthene	77	76	1	25 57-104
2,4-Dinitrotoluene	39	32	20	22 22-81
Pyrene	80	75	6	30 58-148
Nitrosodipropylamine	72	65	10	29 40-127
1,4-Dichlorobenzene	61	54	12	20 16-56



WADSWORTH/ALERT  
LABORATORIES

LAB#: 2B2805-4  
MATRIX: WATER  
METHOD: 625

DATE RECEIVED: 02/28/92  
DATE EXTRACTED: 03/02/92  
DATE ANALYZED: 03/11/92

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	MS %REC	MSD %REC	RPD	QC LIMITS RPD RECOVERY	
Pentachlorophenol	36	32	12	42	13-96
Phenol	71	63	11	23	15-97
2-Chlorophenol	77	71	8	21	17-89
4-Chloro-o-cresol	70	64	9	36	8-101
4-Nitrophenol	36	31	15	34	13-99



WADSWORTH/ALERT  
LABORATORIES

LAB#: 2B2805-6  
MATRIX: WATER

DATE RECEIVED: 02/28/92  
DATE PREP'D: 03/11/92  
DATE ANALYZED: 03/11/92 to  
03/12/92

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY  
INORGANIC PARAMETERS - METALS

ELEMENT	MS	MSD	RPD	QC LIMITS	
	%REC	%REC		RPD	RECOVERY
Arsenic, furnace	95	96	1	19	80-119
Cadmium	90	88	2	15	76-110
Chromium	89	93	4	21	74-117
Lead, furnace	94	95	1	24	76-124



282805-1 to 19  
3980

**WADSWORTH/ALERT LABORATORIES - FLORIDA**

5910-H BRECKENRIDGE PARKWAY/TAMPA, FL 33610  
(813) 621-0784

No 5341

Chain-of Custody Record

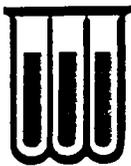
PROJ. NO.		PROJECT NAME/LOCATION					NO. OF CONTAINERS	PARAMETER				REMARKS
SAMPLERS: (Signature)								BNA	624	T2PH	As/6/61B	
STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION							
	2/27/92	14:10		X	mw 1		6	2	2	1	1	Metals bottle is only 2/3 full
		15:10		X	mw 2		6	2	2	1	1	
		10:30		X	mw 3		6	2	2	1	1	
		09:57		X	mw 4		6	2	2	1	1	
		10:20		X	mw 5		6	2	2	1	1	
		10:45		X	mw 6		6	2	2	1	1	
		11:00		X	mw 7		6	2	2	1	1	
		11:40		X	mw 8		6	2	2	1	1	
		11:30		X	mw 9		6	2	2	1	1	
		14:00		X	mw 10		6	2	2	1	1	
		11:15		X	mw 11		6	2	2	1	1	
		14:50		X	mw 12D		6	2	2	1	1	
		14:20		X	EQUIP BLANK		6	2	2	1	1	
		10:03		X	DUP 1		6	2	2	1	1	
		11:45		X	DUP 2		6	2	1	1	1	
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Received by: (Signature)		
Aaron Cohen		2/27/92 17:15		Fred FX								
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Received by: (Signature)		
		2-28-92 15:00		[Signature]								
Relinquished by: (Signature)		Date / Time		Received for Laboratory by: (Signature)		Date / Time		Remarks				



WADSWORTH/ALERT  
LABORATORIES

## QUALITY CONTROL SECTION

- Quality Control Summary
- Laboratory Blanks
- Laboratory Control Sample
- Matrix Spike/Matrix Spike Duplicate Results
- Sample Custody Documentation



Wadsworth/ALERT Laboratories considers continuous analytical method performance evaluations to be an integral portion of the data package, and routinely includes the pertinent QA/QC data associated with various analytical result reports. Brief discussions of the various QA/QC procedures utilized to measure acceptable method and matrix performance follow.

#### Surrogate Spike Recovery Evaluations

Known concentrations of designated surrogate spikes, consisting of a number of similar, non-method compounds or method compound analogues, are added, as appropriate, to routine GC and GC/MS sample fractions prior to extraction and analysis. The percent recovery determinations calculated from the subsequent analysis is an indication of the overall method efficiency for the individual sample. This surrogate spike recovery data is displayed alongside acceptable analytical method performance limits at the bottom of each applicable analytical result report sheet.

NOTE: Acceptable method performance for Base/Neutral Acid extractables is indicated by two (2) of three (3) surrogates for each fraction with a minimum recovery of ten (10) percent each. For Pesticides one (1) of two (2) surrogates meeting performance criteria is acceptable.

#### Laboratory Analytical Method Blank Evaluations

Laboratory analytical method blanks are systematically prepared and analyzed in order to continuously evaluate the system interferences and background contamination levels associated with each analytical method. These method blanks include all aspects of actual laboratory method analysis (chemical reagents, glassware, etc.), substituting laboratory reagent water or solid for actual sample. The method blank must not contain any analytes above the reported detection limit. The following common laboratory contaminants are exceptions to this rule provided they are not present at greater than five times the detection limit.

<u>Volatiles</u>	<u>Semi-volatiles</u>	<u>Metals</u>
Methylene chloride	Dimethyl phthalate	Calcium
Toluene	Diethyl phthalate	Magnesium
2-Butanone	Di-n-butyl phthalate	Sodium
Acetone	Butyl benzyl phthalate	
	Bis (2-ethylhexyl) phthalate	

A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method blanks.

#### Laboratory Analytical Method Check Sample Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to a laboratory reagent blank prior to extraction and analysis. Percent recovery determinations demonstrate the performance of the analytical method. Failure of a check sample to meet established laboratory recovery criteria is cause to stop the analysis until the problem is resolved.



QUALITY ASSURANCE / QUALITY CONTROL  
PROGRAM SUMMARY  
(cont'd)

At that time all associated samples must be re-analyzed. A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method check samples.

Matrix Spike (MS)/Matrix Spike Duplicate (MSD) Recovery Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to two of three separate aliquots of a sequentially predetermined sample prior to extraction and analysis. Percent recovery determinations are calculated from both of the spiked samples by comparison to the actual values generated from the unspiked sample. These percent recovery determinations indicate the accuracy of the analysis at recovering actual analytical method compounds from the matrix. Relative percent difference determinations calculated from a comparison of the MS/MSD recoveries demonstrate the precision of the analytical method. Actual percent recovery and relative percent difference data is displayed alongside their respective acceptable analytical method performance limits in the QA/QC section of the report. The MS/MSD are considered in control when the precision is within established control limits and the associated check sample has been found to be acceptable. A minimum of ten percent (10%) of all analyses are MS/MSD quality control samples.

\*\*\*\*\*EXAMPLE\*\*\*\*\*

COMPOUND	SAMPLE CONC.	MS %REC	MSD %REC	RPD	QC LIMITS	
					RPD	RECOVERY
4,4'-DDT	0	95	112	16	22	66-119
Benzene	10	86	93	8	20	39-150
(cmpd. name)	sample result	1st% recov.	2nd% recov.	Rel.% diff.	accep. method perform range	

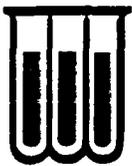
Analytical Result Qualifiers

The following qualifiers, as defined below, may be appended to analytical results in order to allow proper interpretation of the results presented:

J - indicates an estimated concentration (typically used when a dilution, matrix interference or instrumental limitation prevents accurate quantitation of a particular analyte).

B - indicates the presence of a particular analyte in the laboratory blank analyzed concurrently with the samples. Results must be interpreted accordingly.

DIL - indicates that because of matrix interferences and/or high analyte concentrations, it was necessary to dilute the sample to a point where the surrogate or spike concentrations fell below a quantifiable amount and could not be reported.



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2D1601-BK  
MATRIX: WATER

DATE RECEIVED: 4/16/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 4/17/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\*\* (None Detected, lower detectable limit = ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	81	(75-123)	(85-126)	(85-138)
Toluene-d8	99	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	91	(86-115)	(84-124)	(83-128)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2D1601-BK  
MATRIX: WATER

DATE RECEIVED: 4/16/92  
DATE EXTRACTED: NA  
DATE ANALYZED: 4/20/92

SAMPLE ID: LABORATORY BLANK

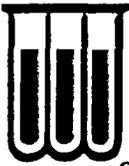
CERTIFICATION #: E84059  
HRS84297

VOLATILE ORGANICS  
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	1
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd  
 ND\* (None Detected, lower detectable limit = 10 ug/L) as rec'd  
 ND\*\* (None Detected, lower detectable limit = ug/L) as rec'd  
 J (Detected, but below quantitation limit; estimated value)  
 B (Compound detected in method blank associated with this sample)  
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	96	(75-123)	(85-126)	(85-138)
Toluene-d8	100	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	96	(86-115)	(84-124)	(83-128)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2D1601-BK  
MATRIX: WATER

DATE RECEIVED: 4/16/92  
DATE EXTRACTED: 4/16/92  
DATE ANALYZED: 4/24/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059  
HRS84297  
BASE/NEUTRAL -- EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2D1601-BK  
MATRIX: WATER

DATE RECEIVED: 4/16/92  
DATE EXTRACTED: 4/16/92  
DATE ANALYZED: 4/24/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS (2 of 2)

HRS84297

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit: estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	59	(22-135)	(10-155)
Fluorobiphenyl	63	(34-140)	(12-153)
Terphenyl-d14	69	(10-132)	(13-140)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB #: 2D1601-BK  
MATRIX: WATER

DATE RECEIVED: 4/16/92  
DATE EXTRACTED: 4/16/92  
DATE ANALYZED: 4/24/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059  
HRS84297

ACID EXTRACTABLE ORGANICS  
USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd  
ND\* (None Detected, lower detectable limit = 50 ug/L) as rec'd  
J (Detected, but below quantitation limit; estimated value)  
B (Compound detected in method blank associated with this sample)  
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
2-Fluorophenol	47	(17-95)	(24-118)
Phenol-d5	45	(11-89)	(17-124)
2,4,6-Tribromophenol	54	(10-134)	(10-156)



WADSWORTH/ALERT  
LABORATORIES

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.  
LAB # : 2D1601-BK  
MATRIX : WATER

DATE RECEIVED: 4/16/92

SAMPLE ID : LABORATORY BLANK

CERTIFICATION #: E84059  
HRS84297

METALS ANALYTICAL REPORT  
SELECTED LIST

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Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	4/28/92	ND	10	ug/L
Cadmium	4/28/92	ND	10	ug/L
Chromium	4/28/92	ND	50	ug/L
Lead	4/28/92	ND	5	ug/L

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.  
LAB ID: 2D1601-BK  
MATRIX : WATER

DATE RECEIVED: 4/16/92  
DATE EXTRACTED: 4/30/92  
DATE ANALYZED: 5/ 1/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059  
HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

---

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



WADSWORTH/ALERT  
LABORATORIES

LAB ID : LCS  
MATRIX : WATER  
METHOD : 624  
RUN ID : W2522

DATE EXTRACTED: N/A  
DATE ANALYZED : 04/17/92

LABORATORY CONTROL SAMPLE RESULTS

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	QC LIMITS	
			RPD	%REC
1,1-Dichloroethene	W2522	105	40	56-133
Trichloroethene		89	20	67-106
Chlorobenzene		89	21	78-122
Toluene		96	30	64-128
Benzene		94	21	83-123
Dichlorobromomethane		88	25	71-123



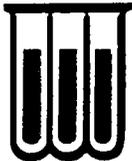
WADSWORTH/ALERT  
LABORATORIES

LAB ID : LCS  
MATRIX : WATER  
METHOD : 624  
RUN ID : W2545

DATE EXTRACTED: N/A  
DATE ANALYZED : 04/20/92

LABORATORY CONTROL SAMPLE RESULTS

COMPOUND	ANALYTICAL RUN ID #	LCS	QC LIMITS	
		%REC	RPD	%REC
1,1-Dichloroethene	W2545	100	40	56-133
Trichloroethene		88	20	67-106
Chlorobenzene		84	21	78-122
Toluene		98	30	64-128
Benzene		94	21	83-123
Dichlorobromomethane		90	25	71-123



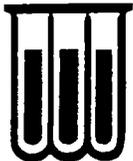
WADSWORTH/ALERT  
LABORATORIES

LAB ID : LCS  
MATRIX : WATER  
METHOD : 625  
RUN ID : S9333

DATE EXTRACTED: 04/16/92  
DATE ANALYZED : 04/24/92

LABORATORY CONTROL SAMPLE RESULTS

COMPOUND	ANALYTICAL RUN ID #	LCS	QC LIMITS	
		%REC	RPD	%REC
1,4-Dichlorobenzene	S9333	46	30	31-99
N-Nitrosodi-n-propylamine		48	41	42-125
1,2,4 Trichlorobenzene		59	43	20-111
Acenaphthene		60	36	31-105
2,4-Dinitrotoluene		37	40	22-107
Pyrene		62	32	12-108



WADSWORTH/ALERT  
LABORATORIES

LAB ID : LCS  
MATRIX : WATER  
METHOD : 625  
RUN ID : S9333

DATE EXTRACTED: 04/16/92  
DATE ANALYZED : 04/24/92

LABORATORY CONTROL SAMPLE RESULTS

COMPOUND	ANALYTICAL RUN ID #	LCS	QC LIMITS	
		%REC	RPD	%REC
Phenol	S9333	27	37	12-90
2-Chlorophenol		41	33	30-100
4-Chloro-3-methylphenol		44	32	12-109
4-Nitrophenol		26	42	10-102
Pentachlorophenol		58	42	10-100



WADSWORTH/ALERT  
LABORATORIES

LAB ID : 2D1601-6  
MATRIX : WATER  
METHOD : 625  
RUN ID : S9340/S9341

DATE RECEIVED : 04/16/92  
DATE PREPARED : 04/16/92  
DATE ANALYZED : 04/24/92

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	ANALYTICAL RUN ID #	MS %REC	MSD %REC	RPD	QC LIMITS RPD %REC
Phenol	S9340/S9341	30	37	21	23 15-97
2-Chlorophenol		37	38	3	21 17-89
4-Chloro-3-methylphenol		48	52	8	36 08-101
4-Nitrophenol		54	58	7	34 13-99
4-Nitrophenol		54	58	7	34 13-99
Pentachlorophenol		33	44	29	42 13-96

\* - Diluted Out



WADSWORTH/ALERT  
LABORATORIES

LAB ID : LCS

MATRIX : WATER

LABORATORY CONTROL SAMPLE RESULTS  
METALS

ELEMENT	DATE	DATE	LCS	QC LIMITS		
	PREPARED	ANALYZED	%REC	RPD	%REC	
Arsenic (furnace)	04/28/92	04/28/92	88	38	53-131	LCS
Cadmium	04/28/92	04/28/92	97	18	77-113	
Chromium	04/28/92	04/28/92	112	21	79-121	
Lead (furnace)	04/28/92	04/28/92	99	33	64-132	



WADSWORTH/ALERT  
LABORATORIES

LAB ID : LCS

MATRIX : WATER

LABORATORY CONTROL SAMPLE RESULTS  
METALS

ELEMENT	DATE	DATE	LCS	QC LIMITS		
	PREPARED	ANALYZED	%REC	RPD	%REC	
TRPH (IR)	04/30/92	05/01/92	100	24	75-124	LCS



WADSWORTH/ALERT  
LABORATORIES

LAB ID : 2D1601-1  
MATRIX : WATER  
METHOD : 624  
RUN ID : W2559/W2560

DATE RECEIVED : 04/16/92  
DATE PREPARED : N/A  
DATE ANALYZED : 04/21/92

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	ANALYTICAL RUN ID #	MS	MSD	RPD	QC LIMITS	
		%REC	%REC		RPD	%REC
1,1-Dichloroethene	W2559/W2560	102	102	0	19	63-123
Trichloroethene		88	90	2	10	75-115
Chlorobenzene		88	86	2	13	74-113
Toluene		99	99	0	23	75-122
Benzene		96	96	0	16	76-126
Dichlorobromomethane		86	88	2	15	67-114

\* - Diluted Out



WADSWORTH/ALERT  
LABORATORIES

LAB ID : 2D1601-6  
MATRIX : WATER  
METHOD : 625  
RUN ID : S9340/S9341

DATE RECEIVED : 04/16/92  
DATE PREPARED : 04/16/92  
DATE ANALYZED : 04/24/92

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	ANALYTICAL RUN ID #	MS	MSD	QC LIMITS		
		%REC	%REC	RPD	RPD	%REC
1,4-Dichlorobenzene	S9340/S9341	47	46	2	20	16-56
N-Nitrosodi-n-propylamine		57	57	0	29	40-127
1,2,4 Trichlorobenzene		65	61	6	15	27-65
Acenaphthene		60	58	3	24	57-104
2,4-Dinitrotoluene		67	65	3	22	22-81
Pyrene		81	83	2	30	58-148

\* - Diluted Out

**WADSWORTH/ALERT LABORATORIES  
SAMPLE SHIPPER EVALUATION AND RECEIPT FORM**

Client: ABB Project Name/Number: NADEP Plan

Samples Received By: Carol McNulty Date Received: 4/16/92  
(Signature)

Sample Evaluation Form By: Carol McNulty LAB No: 42651 201601-1613  
(Signature)

Type of shipping container samples received in? WAL Cooler X

Client Cooler      WAL Shipper      Box      Other     

Any "NO" responses or discrepancies should be explained in comments section.

	YES	NO
1. Were custody seals on shipping container(s) intact? . . . . .	<u>X</u>	<u>    </u>
2. Were custody papers properly included with samples? . . . . .	<u>X</u>	<u>    </u>
3. Were custody papers properly filled out (ink, signed, match labels)? . . . . .	<u>X</u>	<u>    </u>
4. Did all bottles arrive in good condition (unbroken)? . . . . .	<u>    </u>	<u>X</u>
5. Were all bottle labels complete (Sample No., date, signed, analysis preservatives)? . . . . .	<u>X</u>	<u>    </u>
6. Were correct bottles used for the tests indicated? . . . . .	<u>X</u>	<u>    </u>
7. Were proper sample preservation techniques indicated? . . . . .	<u>X</u>	<u>    </u>
8. Were samples received within adequate holding time? . . . . .	<u>X</u>	<u>    </u>
9. Were all VOA bottles checked for the presence of air bubbles? (If air bubbles were found indicate in comment section) . . . . .	<u>X</u>	<u>    </u>
10. Were samples in direct contact with wet ice? (NOTE TEMPERATURE BELOW) . . . . .	<u>X</u>	<u>    </u>
11. Were samples accepted into the laboratory? (If no see comments) . . . . .	<u>X</u>	<u>    </u>

Cooler # 110 Temp 6 °C      Cooler # 187 Temp 5 °C

Cooler # 47 Temp 6 °C      Cooler #      Temp      °C

Comments (3221-<sup>NE</sup>MW10 - BNA bottle broken when rec'd) both at top listed!  
Coc not filled out as to what parameters (VOC, PAH, Metals, TRPH)  
Bottle labels have these parameters - 624, BNA, TRPH, A.S.C.d. CR.F



**WADSWORTH/ALERT  
LABORATORIES**  
Sampling, testing, mobile labs

5910 Breckenridge Pkwy.  
Suite H  
Tampa, FL 33610

Cha... Cl... dy l... ord

(813) 621-0784  
Fax (813) 623-6021

Record \_\_\_\_\_ of \_\_\_\_\_

# 05634

Client:		Project Name / Location			No. Of CON-TAINERS	Parameter										Remarks
Sampler(s)		Project #:				VOC -	PAH -	METALS -	TRPH -	EDB -						
Item #	Date	Time	MATRIX	Sample Location												
1 ✓	4/15/92	1015	WATER	3221 SW - TRIP BLANK	6	2	2	1	1							
11 ✓	4/15/92	1035	WATER	321 SW - MW 2	6	2	2	1	1							
12 ✓	4/15/92	1135	WATER	3221 SW - MW 3	6	2	2	1	1							
2 ✓	4/15/92	1147	WATER	3221 SW - MW 2	6	2	2	1	1							
1 ✓	4/15/92	1200	WATER	3221 SW - MW 1	6	2	2	1	1							
6 ✓	4/15/92	1210	WATER	3221 SW - DUPLICATE	6	2	2	1	1							
5 ✓	4/15/92	1220	WATER	3221 SW - MW 5	6	2	2	1	1							
4 ✓	4/15/92	1230	WATER	3221 SW MW 4	6	2	2	1	1							
9 ✓	4/15/92	1517	WATER	3221 NE - MW 10 +	6	2	2	1	1							both bottles for PNA not broken
7 ✓	4/15/92	1505	WATER	3221 NE - MW 6 +	2	2										
12 ✓	4/15/92	1025	WATER	TRIP BLANK +	2	2										

Total Containers

58

Number of Coolers in Shipment

3

Bailers

Report To:	Transfer Number	Item Number(s)	Relinquished By / Company	Accepted By / Company	Date	Time
Additional Comments:	1		Roger... 1715 4/15/92	Wadsworth/Alert Carol McNulty	4/16/92	10:15
	2					
	3					
	4					
	5					
	6					

Original Accompanies Shipment



WADSWORTH/ALERT  
LABORATORIES  
Sampling, testing, mobile labs

5910 Breckenridge Pkwy.  
Suite H  
Tampa, FL 33610

(813) 621-0784  
Fax (813) 623-6021

Chain of Custody Record

Record \_\_\_\_\_ of \_\_\_\_\_

# 05633

Client:		Project Name / Location			No. OF CONTAINERS	Parameter						Remarks
Sampler(s) <i>Rysz Del</i>		Project #: <i>NADEP PEN</i>				VOC	PAH	METALS	TRIPH	EDB		
Item #	Date	Time	MATRIX	Sample Location								
1	4/15/92	1510	WATER	3221 NE - MW 9	2	2						
2	4/15/92	1508	WATER	3221 NE - MW 11	2	2						
3												
4												
5												
6												
7												
8												
9												
10												
11												

Total Containers **4**

Number of Coolers in Shipment **3**

Bailers **0**

Report To:	Transfer Number	Item Number(s)	Relinquished By / Company	Accepted By / Company	Date	Time
Additional Comments:	1		<i>Rysz Del</i> 4/15/92 1715	<i>Wadsworth/Alert</i> Carol Mc Kulty	4/16/92	10:15
	2					
	3					
	4					
	5					
	6					

Original Accompanies Shipment